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The Monthly Magazine For Sanyo MBC-550 and 555 Users

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SALES REPORT



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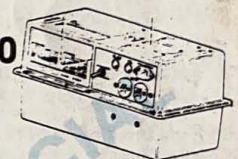
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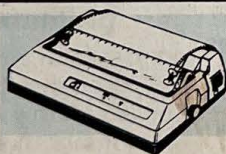
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# Sanyo users get a NEW software deal . . .

## NOW, Your Sanyo can Write Programs for You

Your computer is fantastically fast...once it knows what to do. You probably realize that a computer is the combination of hardware and software, working together smoothly, to give you what you want. Either one alone is useless. Software is really the key...the "mind" of a computer system. Every project or task you want to do requires a new specific software application to make your computer behave exactly the way you desire.

Of course you may be able to "force fit" your application into some existing canned package you have, but to really be flexible you need a separate program for your special purpose.

Until now, that meant you were forced to pay money for application software off the shelf, or if you could afford it, have it custom written for you, or if you were qualified, do it yourself...spending endless hours figuring it out and writing it. **Now, your computer can write individual application programs for you.** These programs are each separate, unique software programs that run in the standard BASIC on your computer.

### Programs Without Programming

ICR FutureSoft has released the **NEW** and improved version of automatic program writers called **QUIKPRO+II**. It is a program that actually writes separate BASIC Programs for you...to do exactly **what you want to do**. And it's **simple and easy to use...you create a new program in minutes instead of hours.**

You can quickly generate a new program when you want it. You can generate thousands of different unique programs, each one standing alone as a complete program that runs in BASIC. Best of all, **you do not have to be a programmer to use it.** The QUIKPRO+II software becomes your personal programmer, waiting to do your work for you any time of day or night you choose to use it.

### The All-In-One Program

The custom programs you can generate from the new QUIKPRO+II will let you perform Personal Filing, Fast Data Retrieval, including Changes, Deletions and Searches. You can selectively Print Custom Letters, all kinds of forms (if you have a printer). This new feature is called **Free Form Reporting**. You can even include calculations in the programs you create. QUIKPRO+II is perfect for creating inventory programs. You can use QUIKPRO+II to prepare letters and selectively address the letters to only certain people. And of course you can **SORT** your reports so that they print out information in the order that you want it, or print out only certain information. In fact, you can actually use QUIKPRO+II to create an easy to use Data management program or a simple spread sheet. You can do all of this and more with this All in One program...and the best part is that **you need no BASIC programming experience.**

### How Does It Work?

You can do it simply by answering easy questions that appear on your screen. You won't have to learn any Computer commands or special Programming Languages. Instantly the QUIKPRO+II software instructs the computer to write efficient error free, BASIC Programs and puts the **Programs right onto your own disk, ready for you to use.**

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*"The program seems to be good and I must compliment you on the documentation. It is the best of its kind that I have seen."*

From an INSURANCE AGENCY MANAGER:

*"I would like to compliment you on an excellent...program."*

From a HOBBIEST USER out in Oklahoma:

*"I thought I would drop a quick note about QUIKPRO. I have it running and it **will do** what I bought it for. I am very pleased with it..."*

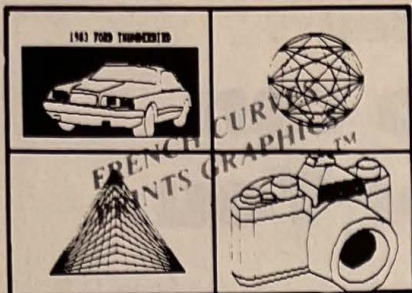
This from a Vice-President of a Federal Savings & Loan:

*"In the past several weeks, I have used QUIKPRO software on four **different** programs. I am pleased with the results achieved so far and with your help over the telephone."*

### Special Sanyo Deal

Sanyo users can get QUIKPRO+II direct at the introductory price of \$74.50 plus shipping and handling with a special 10 day satisfaction guarantee from delivery. You can order now by calling TOLL FREE 24 hours daily 1-800-824-7888, ask for operator 441. In California call 1-800-852-7777, operator 441. Specify your Sanyo Model. Send mail orders to: ICR-FutureSoft, 1718 Kingsley Ave., P.O. Box 1446-SA, Orange Park, FL 32073 Dealer inquiries call (904) 269-1918 QUIKPRO+II is also available on IBM-PC, TRS-80, CP/M 8" and Osborne.





**FRENCH CURVES** is a slick product! Extremely easy to use ...

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**FRENCH CURVES** is a versatile program with which even I can produce high quality graphics, charts, blueprints or other graphics as desired.

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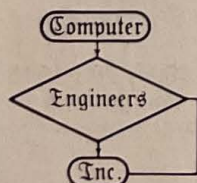
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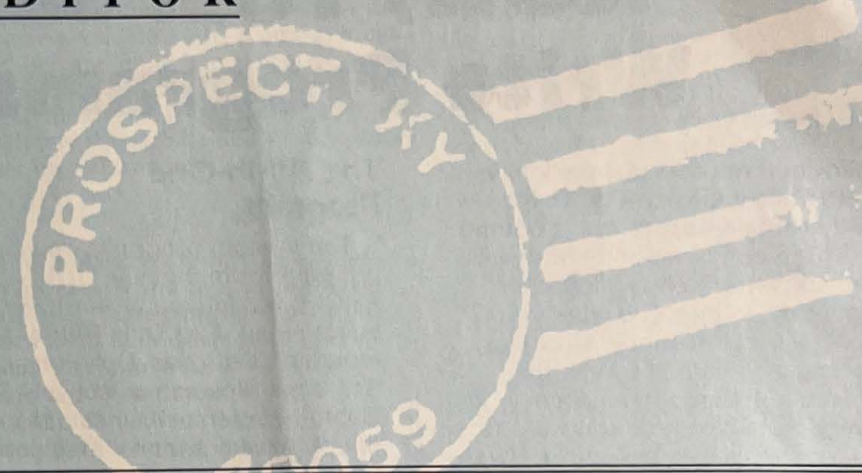
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## LETTERS TO THE EDITOR



### NORTH OF THE BORDER

Editor:

Congratulations on the debut of your magazine for the Sanyo personal computer. I liked it; however, I think you should think a little less provincially and provide information for your Canadian readers and owners of Sanyos.

For instance, where can **SOFT SECTOR** be purchased in Toronto? Any clubs in Toronto? Etc.?

I hope you can accommodate us. Many thanks.

Charles N. Figueiredo  
Toronto, Ontario

**Editor's Note:** We certainly don't mean to be provincial, Charles. We have had some difficulty getting a list of stores in Canada that carry **SOFT SECTOR** on their racks, but we hope to be able to list them in our next issue. CompuSoft, in Edmonton, Alberta, handles our Canadian distribution and if you wish to contact them, they will be happy to put you on the right track. Their phone number is (403) 423-1175.

As for a user's group in Toronto, we are unaware of any at this time.

### AND NOW, FARTHER SOUTH

Editor:

I wish to acknowledge your super prompt reply and remittance of the first two issues of **SOFT SECTOR** by return airmail. Thank you for consideration of my urgency.

What do I think of your magazine? Thank God it has happened! The Sanyo people should take a good look at themselves and back you to the hilt (this is the TRS-80 Model III of the 16 bit micro game — I know, I have both). I certainly like what you print and I hope you grow and grow and grow.

Thank you again. I am impressed — keep up the good work.

James E. Smith  
Panama 5, Panama

**Editor's Note:** And thank you, James. In case you haven't noticed yet, **SOFT SECTOR** is a bit heavier this month. We're rather proud of the fact that we were able to expand by 16 pages, and that means 16 more pages that we can pack with information and programs. We owe it to you, our readers; to our advertisers; and to the continuing prosperous relationship between the two.

### CAN'T TELL NAUGHT FROM NAUGHT

Editor:

I was wondering if you could specify the zeros and the O's in the program section. ...

Masayoshi Takashima  
Houston, TX

**Editor's Note:** Indeed we can, Mr. Takashima, and we're glad that you and some other readers brought the problem to our attention. As you can see in this month's listings, we have begun putting a slash through the zeros and we hope this clears up any ambiguity. And next month, we intend to pass along the handy little **BASIC** utility that we've begun using for daisy wheel printers that don't use a slashed zero.

### AUTOEXEC REVISED

Editor:

I recently bought *M-Disk* from MichTron and had no trouble getting it to work, but the software review of it (September '84) by Fred Clabuesch made *WordStar* work better than my attempts. Yet, I think there is a way of improving it still more. The instructions furnished with *M-Disk* leave you logged onto drive A: with a drive A: directory displayed. My version of *AUTOEXEC*.



BAT logs you onto drive C:, thus getting you started even faster.

MD2/C/128

COPY WS\*. \* C:

COPY MAILMRGE.OVR C:

COPY COMMAND.COM C:

C:

WS (Note that C: is on a separate line.)

George Shepard  
Brookline, MA

## DEFENDING THE DOCUMENTATION

Editor:

Congratulations on a fine publication. The two issues I have seen are informative, well organized, and the material is presented in a form usable by beginners and experts alike.

I have a comment for those who complain about the quality of the Sanyo documentation. It is better than that supplied with many "name brand" machines and supplies the essential information to get things up and running. Best of all, it is supplied with the machine. Several higher priced systems charge the buyer \$50 to \$150 for a user's manual.

A manual covering all of the vast capabilities of any computer system in detail would require many volumes. Since most users are interested in using only a portion of the machine's capabilities, the typical owner's manual is a condensed summary of the most used and useful features. More detailed information is readily available in other books and publications.

Printer documentation is generally incomplete and inaccurate. The quality of the documentation has no relation to the price of the printer. Unfortunately, users tend to blame the computer maker rather than the printer manufacturer for the difficulty.

R.W. Tackett  
Paoli, PA

## REVIEWING REVIEWS

Editor:

Regarding your review of Charles Sternberg's *BASIC Computer Programs for the Home*, you missed the boat on one of the book's giant flaws.

Based upon your recommendation, I purchased the book this afternoon. I reasoned while at the bookstore that, given the massive number of programs present, there must be a program or two that would have some relevance. However, upon getting home, I found nearly all the programs better suited for a VIC 20. Simply, they were not worth the trouble necessary to type them into the computer!

I did, though, attempt to type in the auto maintenance program and this is when I came head to head with a giant flaw that you should have noted in your review. A book of programs that is not spirally bound (with rings) shows no consideration for the purchaser. It was fairly easy to type in the first portion of the program which listed on the right-hand page. The remaining third, though, which was on the left page, was very difficult to type in. I always use a ruler to

mark my place when entering a program, but it was impossible given the way this book was bound.

Back to my first point: I would have loved this book two or three years ago when I first purchased my humble VIC. Today, though, I have become much more demanding in what I wish a computer to do. For that reason, the book is irrelevant to me, so I just tossed it into the garbage and wrote it off as another wasted computer purchase.

John S. Leahy  
San Marcos, CA

**Editor's Note: We're very sorry if our review caused you to make a useless purchase. Please remember, however, that a lot of our readers are still at the point that you were "two or three years ago" when you say that you would have loved the book. But thanks for your observations; perhaps you have saved some of the more experienced readers from the same mistake.**

Editor:

As the author of the *French Curves* graphics program, I want to thank you for the good and honest review published in the October issue of *SOFT SECTOR*. All of your constructive comments were taken with the highest respect.

However, I would like to mention that the copy of *French Curves* used for the review was a pre-market copy and the current version includes all of the following improvements.

- a) Help command
- b) Integrated demo with Hi-Res graphics
- c) Auto-loading and prompted screen dump installation
- d) New revised users manual
- e) Direct action commands (no need to press return)
- f) Editing capabilities
- g) Utility commands

One point that I would like to emphasize is that *French Curves* not only saves or prints your graphics creations, but also lets you recreate them in your own BASIC programs. The new users manual explains in detail how to implement this feature.

Keep up the good work with your magazine.

Yvon Bourque  
Pinson, AL

## SPEEDY RELIEF WITH BUFFERIN'

Editor:

Thanks for your information-filled second issue. I enjoy your tidbits of information on getting more performance out of our MBC-555s. In your September issue, Tim Purves has some good comments on getting more speed out of *WordStar*. Here is another tip that will get more speed out of all of MicroPro's software.

MicroPro's software, as you know, does a lot of disk accessing for screen overlays, etc. The 550/555 has a buffer which holds the information coming from the disks or going

to the disks. You can speed up *WordStar* (and the other packages) by increasing the size of this buffer, therefore decreasing the number of disk accesses.

This is very easy to do. Open a *WordStar* file using the 'N' (non-document) function. Name your file *CONFIG.SYS* and type in: *BUFFERS=10*.

Copy this file to your system disk that you use to boot the operating system. When you start up your computer, this file is looked for (like *AUTOEXEC.BAT*) and it increases your buffer size. You can use any number after *BUFFERS* up to 99. I would recommend that you try numbers between 10 and 20.

Have you heard of anyone who has patches to convert MicroPro's *CorrectStar* for use on the Sanyo. MicroPro will not supply us with a version of *CorrectStar* because of their contract with Sanyo and I have not had time to get a response from Sanyo as to whether they will sell it.

Steven G. Earl  
Idaho Falls, ID

**Editor's Note: Thanks for the handy tip, Earl. I'm afraid we have no news about *CorrectStar*.**

## MAESTRO SANYO

Editor:

I want to know how to program the Sanyo MBC-555 to generate musical sounds. I read the review in *Byte* magazine (August '84) which said that we can make the Sanyo generate plenty of sound. I thought we could not generate anything but noise.

Jirapol Pobukadee  
Philadelphia, PA

**Editor's Note: We have a game scheduled for the December issue that generates some remarkable tones, but not quite true music . . . yet.**

## FONT POINTERS

Editor:

For users of my *Font* program (September '84), here are the correct *DOSPTR* values for two additional versions of MS-DOS:

DS-DOS 1.25 w/IO.SYS 2.10 &H7A4  
MS-DOS 1.25 w/IO.SYS 2.01 &H764

For other DOS versions, there is a simple way to find the pointer using *DEBUG*. From the *DEBUG* prompt, type *S40:0 L2000 00 FE*. At least one number (probably more than one) will be returned in the format "0040:xxxx" where "xxxx" is the actual address used for *DOSPTR*. On most DOSs, the first value returned is the one you want, but it should be in the same general area as the other pointers given, so if the first one doesn't work, try the second or third value.

I have also received some requests for instructions on modifying certain applications programs, which use their own separate pointers to the font segment. The most frequent request has been for modifications to *Picasso*, MichTron's new graphics work

Continued on Page 64





**By Dr. Michael W. Ecker**  
**Soft Sector Contributing Editor**



# THE INTEREST IN INTEREST

---

WITH THE HOLIDAY SEASON JUST AROUND THE CORNER, LET'S TAKE THE YEAR'S LAST, LONGING LOOK AT A SUBJECT WHERE IT IS MUCH BETTER TO RECEIVE THAN TO GIVE

---

\$uppose someone were to ask you: Which is more advantageous? Bank interest of 10 percent compounded semi-annually, or 9.5 percent compounded daily? Does the answer depend on the amount of money at stake or how long you keep your money in the bank? How long does it take for your money to double at a given rate of interest (I wish!)? And what would happen if you could have your interest compounded every second?

In the premier issue of *SOFT SECTOR* (August '84), I considered the flip side of this coin, namely the question of *paying* interest. Toward that end, I offered an original program for loan amortization based on a little formula I developed (if you must know, based on infinite geometric series). Being in debt for a while inclined me toward the negativism of thinking in terms of loans, until I re-

alized, "Hey, some readers out there must have money and would probably be more interested in saving — *getting* interest — rather than borrowing."

So I would like to consider the original questions, teach a bit about the mathematics of compounding, offer a program or two, and in the process, maybe digress to some sidelights. You will find it quite (ahem) interesting.

Let's start with a simple example. Say you have \$1,000 and a bank offers you a not very exciting six percent annual interest rate on your money. By itself, this information is not quite sufficient. After all, when is the interest paid? Is the money you earn considered as becoming part of the principal which will earn future interest? Assume, then, that interest is paid annually, and to simplify matters, assume further that no money other than interest is ever deposited and no money is ever withdrawn. Interest is



taken to be paid annually on whatever is in the account, regardless of origin. (Simple interest, on the other hand, is based only on deposits you make yourself. However, it is rarely offered nowadays except as a ruse to deceive depositors when the quoted rate is too good to be true.) So, returning to the original numbers, at the end of one year you would have \$1,000 principal plus \$60 interest equaling \$1,060 new principal. The \$60 comes from taking .06 times 1,000, of course.

Now, here we can make some observations. The first is a mathematical shortcut which is the key to developing a standard formula. It can be applied to

interest, sales taxes, tipping and similar situations. Anytime that you add an original quantity (such as principal here) and a fraction of that amount (such as interest) rather than compute the fraction of the amount and add it separately to the original, as we did above, you can instead take one plus the fraction itself, times the original amount. To bring this down to earth, when the interest rate is six percent, which is .06, instead of taking .06 of 1,000 and adding that to 1,000, we can just take 1.06 times 1,000 to get 1,060. The algebraic explanation is simple: If 'P' is principal and the interest rate as a decimal is 'r,' then the interest is, by definition, 'r' of (meaning times) 'P,' or 'rP.' The amount you have at the end of the interest period is therefore 'P' (original principal) plus 'rP' (interest). Factoring out 'P' on the right gives  $(1+r)P$ , or what I gave above.

You can apply this to other situations as well. If you live in Pennsylvania, where the sales tax is six percent, you can compute the after-tax price on a taxable item by multiplying the price by 1.06. Or, if you plan to tip 15 percent, you can compute your total expense (bill plus tip) by multiplying the amount on the bill by 1.15.

Let's look then to the next year in our interest problem, with \$1,060 as principal. When interest is given the second time, you would have \$1,060 (principal) plus .06 times 1,060 (interest), or by the shortcut, 1.06 times 1,060. This equals \$1,123.60. Note that this time the interest is \$63.60. The "extra" \$3.60 comes from the interest on the previous interest, and this is the essence of compounding.

However, there is another way of looking at it which will explain the formula used for compound interest. Note that if we do not actually carry out the multiplications, we have this pattern:

Year 0: 1,000  
Year 1: 1,000 times 1.06  
Year 2: 1,000 times 1.06 times 1.06

In year two, the second 1.06 comes from the second crediting of interest to your account. At this point you can see that the third year would have an additional factor of 1.06 involved. With all these repeated factors, it is simpler to use exponents (or powers). We may surmise easily that at the end of year 'N', you will have 1,000 times  $1.06^N$ . On your Sanyo (and some other computers), exponents are entered in BASIC and

*(Dr. Michael W. Ecker is assistant professor of mathematics at the Worthington Scranton Campus of the Pennsylvania State University, as well as an author and contributing editor to Popular Computing and Byte magazines. His company, Recreational Mathematical Software, is marketing Magic Math, a collection of unusual mathematical recreations for the Sanyo and other IBM-compatible machines, as well as TRS-80 Models 1, III and 4.)*

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other languages via the caret (SHIFT-6 combination).

Now, what if you can get interest compounded semi-annually instead of annually? Sticking with our example, this would mean that you get three percent twice a year. This, however, is not the same as six percent once a year; it is better. At the end of six months, you will have \$1,030. Six months later, when the first year is up, you will have another 1.03 times that, or \$1,060.90 (check these figures!). Aha! You have an extra 90 cents. It might not seem like much, but on such compoundings are great fortunes made!

What if you got interest monthly? Then you would get  $1/12$  of the six percent, or .5 percent each month. By the same general principle as discussed above, at the end of one year you would have 1,000 times  $1.005^{12}$ , or about \$1,061.67. Incidentally, when this calculation is done, it is understood in algebra, as with calculators and computers, that the exponentiation is carried out before the multiplication is.

We seem to be getting wealthier by the minute, so let's try daily compounding, which some banks do, such as in the "DODO" or "DOD-DOW" (day of deposit to day of withdrawal) accounts. This means that we have, at the end of the first year, 1,000 times  $(1 + .06/365)^{365}$ . The division by 365 reflects the fact that you get  $1/365$  of the six percent each day. The power of 365 reflects the 365 com-

poundings for the year. You can calculate this on a calculator or in Sanyo BASIC. For the latter, you do not even need to write a program. From the BASIC Ready prompt, you are in immediate mode and can use the computer as a calculator. Type in: `PRINT 1000*(1+.06/365)^365`. (Print 1000\*(1 + .06/365), then a caret, without skipping a space, followed by 365.) Any way you do it, you ought to get an answer which you interpret as being about \$1,061.68 or maybe \$1,061.69. How disappointing! Only about a cent or two more than monthly compounding offers! Evidently, there is a limit to the growth of your account, regardless of the frequency of compounding. But two things should be summarized.

First: Compounding, especially more frequent compounding, does provide more interest than simple interest would provide. Second: However, there is a limit to how far you can stretch your money with a given rate of interest.

Notice that our monthly compounded amount of \$1061.67 is 6.167 percent higher than \$1,000. In other words, getting six percent annual interest with monthly compounding produces the same results in one year as does simple interest of 6.167 percent. The rate of six percent in this illustration is called the nominal rate, while the 6.167 percent is the effective annual rate, or effective annual yield. This explains why banks regularly tout two figures, and how to

compute the latter.

In general, periods of more than one year behave essentially the same way. If you have a period of 't' years ('t' is for time, and is not necessarily a whole number), with 'N' interest periods per year, then you have 'Nt' compounding periods. It follows that if you start with a principal of 'P' and are offered interest at nominal rate 'r' (in decimal form, not percent!), then the amount of money that you have after 't' years is:  $P(1 + r/N)^{Nt}$ .

The program listing allows you to input any given principal, nominal interest rate, number of compounding periods per year, and number of years, and will output the amount of money you will have at the end of that time. Note the use of the `PRINT USING` command to format the output to give dollars and cents.

In an upcoming issue, we will pursue this more by investigating the significance of the limit on the growth of the interest, and look at a *CalcStar* template we can make very easily for some of these financial formulas. We will also pursue some of the other questions raised in the beginning of this article, such as the time it takes for money to double. Depending on reader interest, we can pursue related topics, such as annuities, and see how geometric series are involved.

Until next time, happy — if not prosperous — computing!

#### The listing:

```
10 CLS:PRINT:PRINT
20 PRINT"          PROGRAM TO COMPUTE COMPOUNDED INTEREST":PRINT
30 PRINT" by Michael W. Ecker, Ph.D./129 Carol Drive/Clarks Summit, PA 18411"
40 FOR DELAY=1 TO 1000:NEXT
50 PRINT:PRINT:PRINT
60 INPUT"HOW MUCH PRINCIPAL IS BEING DEPOSITED";P
70 INPUT"HOW MANY TIMES PER YEAR IS INTEREST BEING COMPOUNDED";N
80 INPUT"WHAT IS THE NOMINAL RATE OF INTEREST (ANNUAL, in decimal form)";R
90 INPUT"HOW LONG IS INTEREST REMAINING IN ACCOUNT (number of years)";T
100 PRINT:PRINT"AT THE END OF THAT TIME, YOUR BALANCE WILL BE"
110 PRINT USING"$###,###,###.##";P*(1+R/N)^(N*T)
120 PRINT:PRINT"HERE ARE THE DETAILS . . .":FOR DELAY=1 TO 1500:NEXT
130 PRINT:PRINT"AFTER PERIOD NUMBER","ACCOUNT HAS"
140 FOR K=1 TO N*T
150 PRINT K,:PRINT USING"$###,###,###.##";P*(1+R/N)^K
160 IF K/12=INT(K/12) THEN PRINT:INPUT"<RETURN> TO CONTINUE";G$:PRINT:PRINT
170 NEXT K
180 GOTO 50
```



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## COMPARE AT ANY PRICE



# Personalizing Your Prompt

---

**AFTER ALL, YOU SPENT A LOT OF MONEY  
ON YOUR COMPUTER — WHY SHOULDN'T  
IT SHOW YOU SOME RESPECT!**

---

**S**everal years ago, while working with a Radio Shack Model II, I got really tired of seeing the prompt which said "TRSDOS READY." It just seemed to me that something a little more spectacular could be done.

Lo and behold, I bought a package of enhancements to BASIC and there was one which allowed me to change the prompt from "TRSDOS READY" to "BY YOUR COMMAND." I thought that was pretty neat, but got kind of tired of it, too. So I looked at the files that had been furnished with the enhancement package and discovered that, by just *POKEing* a few bytes, I could make the prompt message be anything I wanted, so long as it wasn't more than 12 characters long (including spaces).

From then on, my computer said "Yes Mr. Falk."

Although I have not seen it documented in the Sanyo manuals, MS-DOS has a neat little command that will let you do the same thing, but in spades. This command, called *PROMPT*, will let you custom-design your own system prompt with ease.

Indeed, *PROMPT* will allow you to change the prompt from the standard (which is the drive designator and the ">" symbol) to just about anything that you want.

Since I have a hard time remembering what day it is — and, sometimes, an even harder time remembering the time of day — I have changed the prompt character to include these pieces of information. Whenever my computer is waiting for me to do something, it will show something like this:

```
Time: 19:38:12.61      Date: Sun 9-23-1984  
C>
```

I have it set up so that the date is to the extreme right of the screen and the time to the extreme left. The drive designator is in a line all by itself.

BY  
LAWRENCE C. FALK

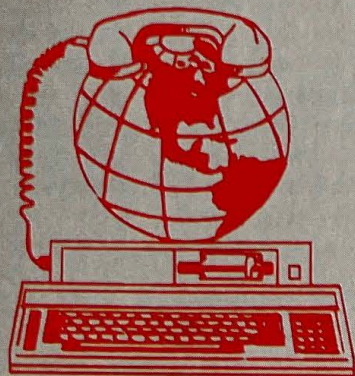
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## DS DOS PLUS by Tim Purves

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## MI-TERM by J. Weaver Jr.

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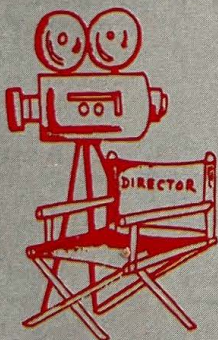
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## FREEZE FRAME by Ken Olson & Bill Dunlevy

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## MI-KEY by Dean Brown

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"How do you do that?" someone asked me the other day. I referred him to a page in the manual but, in asking around, I discovered that almost no one knew about it. So, here is how it works.

The **PROMPT** command allows you to do several things, including entering any sort of string you want. There are also special characters which let you call to the system to do special things, such as get the date or the time from the computer itself. A list of these special commands is:

- t the current time
- d the current date
- p the current directory
- v the MS-DOS version number
- n the current drive specification
- g the "greater than" (>) symbol
- l the "less than" (<) symbol
- b the '|' symbol
- a carriage return and a line feed
- s a leading space
- h a backspace
- e the escape sequence

To my mind, at least, this is really neat stuff. It allows me to customize my prompt symbol in any way that I want. This is so because, in addition to the special characters, I can just type in the words "Time:" and "Date:" and the spaces that are necessary to space them apart.

My prompt command looks like this:

**PROMPT** Time: \$t (40 spaces) Date: \$d\$\_\$n\$g

This tells the computer to generate a prompt that starts with the word "Time:," then put in the time itself (\$t). Then, it puts in 40 blank spaces and puts in the word "Date:," followed by the date (\$d). Finally, there is a carriage return and line feed (\$\_), the drive designation (\$n), and the greater than symbol (\$g). That gives me the prompt line I am looking for.

At one time I put in "Lonnie Falk's Computer," plus appropriate spaces to center it, in the first line. But it looked too messy, so I took it out. If you simply do this command, even directly from the keyboard, you will get your new prompt symbol or symbols right away.

But that's a big job, and a little confusing, every time you turn on your Sanyo. So, the easy answer is to save the whole thing into an automatically executing file.

The easiest way to do it is to simply type:

**COPY CON: FILENAME.BAT**  
**PROMPT Hello There, It Is \$t\$\_\$n\$g**

Then type a **CONTROL-Z** and **ENTER**. You will have a file named **FILENAME**. If you merely type the name of the file from the keyboard, it will execute. If you want the file to execute automatically whenever you start your computer, just name the file **AUTOEXEC.BAT**.

It is that simple and you can have a lot of fun with this sort of ability. Of course, if you do not have a hard disk, you will have to transfer the file to every floppy disk on which you intend to use it.



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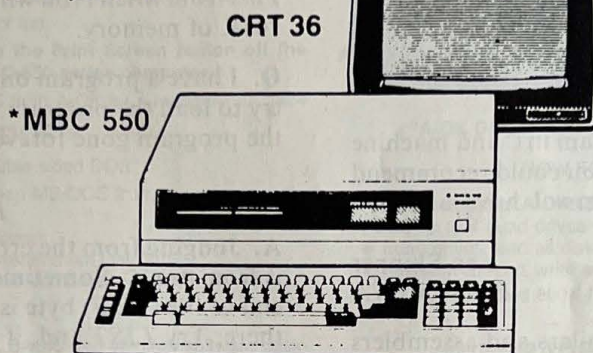
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# INPUT/ OUTPUT

By Tim Purves  
Soft Sector Contributing Editor

**Q.** I am interested in learning to program in C and machine language and I would appreciate it if you could recommend any specific assemblers or C compilers. I have a Sanyo MBC-555-2 with 256K of memory.

Ken Skinner  
Bellevue, WA

**A.** Below is a list of the various compilers and assemblers that I use. On my machine, I have 512K of memory, three floppy disk drives and a 10 Meg hard disk drive. Also, I use a version of MS-DOS 1.25 that has been adapted for a hard disk and double-sided drives. All of the compilers and assemblers below require 192K of memory and recommend at least two drives.

#### Assemblers:

MASM Ver. 1.08 by Microsoft	192K and one drive
ASM88 Ver. 2.2 by DeSmet Software	192K and one drive

#### Compilers:

LATTICE C Ver. 2.0 by Lattice	192K and two drives
DeSmet C Ver. 2.2 by DeSmet Software	192K and two drives
TURBO PASCAL Ver. 2.0 by Borland	128K and one drive

#### Linkers:

LINK Ver. 1.10 by Microsoft	192K and one drive
-----------------------------	--------------------

This is a list of some of the commercial software products that I use. Also, please note that some of these products may work in 128K machines. I tend to use the Microsoft assembler and the Lattice C compiler the most because they have compatible object code files and support the large memory model.

---

*(Tim Purves is an expert on the Sanyo 550/555 series computers and is an experienced programmer in assembly code, PASCAL, C and BASIC. He is available to answer any questions that the readers of SOFT SECTOR might have. All questions should be addressed to SOFT SECTOR, P.O. Box 385, Prospect, Ky., 40059.)*

**Q.** The Sanyo manual says that the limit of RAM memory is 256K. Is there any way around to increase RAM memory to more than 256K, allowing me to run programs that require, let's say 384K?

Diego Duque  
Miami, FL

**A.** There are several ways to increase the memory in the Sanyo to more than 256K. One method requires that you "piggyback" more memory chips on top of the memory chips already installed and make some changes in the address decoder and chip select. This is the method that I have been using since January. Another method is to use an expansion box and plug in extra memory cards. Thought Works is working on such an expansion box. Also, the standard DOS that is included with the Sanyo will not boot in a machine with extra memory. DOSs such as *DS-DOS Plus* from MichTron will boot in a machine containing up to 768K of memory.

**Q.** I have a program on a disk that I can't recover. When I try to load the program, I get an "Input Past End" error. Is the program gone forever or can I recover it somehow?

Scott Hunter  
Viua Rica, GA

**A.** Judging from the error message, I assume that the error is from BASIC. Sometimes BASIC will return this error if the end of file (EOF) byte is wrong, but the program will all be there. Try *LIST* and, if it is all there, save the program to another diskette. If the program is saved in ASCII, try loading the program into a word processor and take a look at it, modifying it as necessary. The reason this might have happened is that you changed disks with files open or saved the program to a full disk and didn't realize that it had occurred.

**Q.** I am using *EasyWriter I* to generate upload files to MCI Mail. *EasyWriter* appears to be placing control codes at the end of the file. What's the problem?

Karen Theisen  
Livonia, MI

**A.** You're right. *EasyWriter I* is placing control codes at the end of the file. These codes are used by *EasyWriter* for page formatting and for remembering where the cursor was when you saved the file. About the only way to overcome this is to write a convert program that will convert the *EW I* file to a standard ASCII file. Also — to users of *WordStar* — use the Non-Document Mode when generating files to be sent to places like MCI Mail.

**Q.** I am interested in a program that plots two- or three-variable equations, and one that allows data generated by other programs to be plotted. Is there one available for the Sanyo?

Ricardo Bendana  
Miami, FL

**A.** I haven't heard of one written for the Sanyo. Maybe one of the readers can help. If anyone out there knows of such a program, please drop me a line here at SOFT SECTOR and I can pass it along to other readers.



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**Q.** After redefining the function keys in *WordStar*, I was disappointed that the prompts on the 25th line did not change. Did I do something wrong?

Jim Gach  
Livonia, MI

**A.** No, you didn't do anything wrong, but MicroPro did! They should have provided a way to change them in *Install*. All is not lost, however, because we can change them with *DEBUG* or a "zap" program such as *SuperZap*. To change them with *DEBUG*, type in the following commands:

To change the first key message to "EXIT," type:

```
-e 5067 'EpXplpTp p p p p'
```

A:DEBUG WS.COM

- (Note: the '-' is the the *DEBUG* prompt.)

-d 5067 510f

XXXX:5060		31-07	20	70	41	70	42	70	4F		1.	pApBpO
XXXX:5070	70 52 70 54 70 20 07	32-07	20	70	53	70	41	70	56	pRpTp	.2.	pSpApV
XXXX:5080	70 45 70 20 70 20 07	33-07	20	70	45	70	58	70	49	pEp p	.3.	pEpXpl
XXXX:5090	70 54 70 20 70 20 07	34-07	20	70	54	70	4F	70	50	pTp p	.4.	pTpOpP
XXXX:50A0	70 20 70 20 70 20 07	35-07	42	70	4F	70	54	70	54	p p p	.5.B	pOpTpT
XXXX:50B0	70 4F 70 4D 70 20 07	36-07	44	70	45	70	4C	70	45	pOpMp	.6.D	pEpLpE
XXXX:50C0	70 54 70 45 70 20 07	37-07	20	70	53	70	54	70	41	pTpEp	.7.	SpTpA
XXXX:50D0	70 52 70 54 70 20 07	38-07	20	70	45	70	4E	70	44	pRpTp	.8.	pEpNpD
XXXX:50E0	70 20 70 20 70 20 07	39-07	20	70	4D	70	4F	70	56	p p p	.9.	pMpOpV
XXXX:50F0	70 45 70 20 70 20 07	31-07	30	07	20	70	48	70	49	pEp p	.10.	pHpI
XXXX:5100	70 44 70 45 70 20 70	00-00	0F	20	54	68	69	73	20	pDpEp p...		This

The length of each key message is eight letters, which takes up 16 bytes of memory — one for the letter and one for the attribute. After changing all the prompts that you wish to change, type 'w'. This causes the modified *WS.COM* to be written out to the disk.

-w

writing xxx bytes.

-q (exits back to DOS)

If you have *SuperZap*, it is much easier; just go into the file mode and enter *WS.COM* for the filename and 39 for the relative sector. Then use the ASCII modify mode to change the prompts. Please do not attempt this on your only copy of *WordStar* — make a backup first. Also, the debug method assumes that you have had some experience with *DEBUG*.

**Q.** I will soon be receiving my Sanyo MBC-550 and I have a few questions.

1. Will the Sanyo be able to use the new 256K memory chip?
2. Will Sanyo BASIC address more than 256K bytes of memory?
3. Is the Sanyo keyboard plug compatible with IBM?
4. Is there a good assembler/debugger for the Sanyo?
5. Is a special interface needed to use a hard drive?

Scott Farnham  
Pinellas Park, FL

**A.** To start off, I haven't seen the current specifications of the new 256K RAM chips. I would suspect that the multiplex address lines of the Sanyo would have to be modified. I am sure that they would not be a direct plug-in replacement. Sanyo BASIC is a rather unique program in the way that it allocates memory. With a 512K machine, it seems to allocate 64K to each section of program, array, string, and simple variables. With this type of allocation you can have quite a big program. I don't think that Sanyo BASIC will allow you to allocate more than 64K to any one section.

As for the plug compatibility with the IBM, the plug is the same and the Baud rate is the same, so it might work. I haven't tried it as of yet. If any reader has, please drop me a line and I will pass it along.

There are several good assemblers and debuggers available for the Sanyo. The debugger that comes with MS-DOS 2.11 has an assembler and disassembler built right in. In my response to the first letter I have listed the assemblers and compilers that I use.

In order for the Sanyo to use a hard drive, you need what

is known as a "host adapter." This device is used as an interface to enable the Sanyo to talk to a hard drive controller which communicates with the hard drive electronics. In addition to the above mentioned hardware, you need appropriate software to interface the DOS to the hardware. Several companies have hard drives available for the Sanyo. They can be found in advertisements in this and previous issues of *SOFT SECTOR*.

*Helpful Hint . . .*

## RAM Expansion

Are you wondering about the exact results you will get by adding more memory chips? Here are the numbers:

RAM:	128K = 113,568 bytes total; 91,408 bytes free
	192K = 179,104 bytes total; 156,944 bytes free
	256K = 244,640 bytes total; 222,480 bytes free
BASIC:	128K = 41,784 bytes free
	192K = 107,320 bytes free
	256K = 172,856 bytes free
CalcStar	128K = 20,327 bytes remaining
(with 0 cells	192K = 85,863 bytes remaining
allocated):	256K = 151,399 bytes remaining

[The above numbers are for MS-DOS 1.25.]

Bruce A. White  
Mt. Rainier, Md.



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**Q.** I have been trying to write a set-pixel routine to be used in a machine language program. Could you help me get started?

Eric Fussner  
Livonia, MI

**A.** I would be glad to. This is a version of the routine that I use in my programs. The formula to compute screen address is:

$$\text{SCREEN} = \text{INT}(\text{Y}/4) * 320 + \text{INT}(\text{X}/8) * 4 + \text{Y} \text{ MOD } 4 \quad \text{BIT} = \text{X} \text{ MOD } 8.$$

```

bit_mask      db      128,64,32,16,8,4,2,1      ; rotated bit mask

green  dw      0                                ; segment for the green screen
red    dw      0f0000h                          ;      "      red      "
blue   dw      0f4000h                          ;      "      blue     "
off_ptr dw      0                                ; current offset of the screen
dos_ptr dd      0                                ; pointer to dos area

calc_off:
    cmp     green,0                                ; have we called before
    jnz     get_it                                ; if we have just get ptr
    push    ax
    push    bx
    push    cx
    push    dx
    push    es                                    ; save some registers
    mov     ah,70h                                ; call to Sanyo BIOS returns
    int     10h                                    ; video parameters
    mov     word dos_ptr,bx                       ; ptr to offset of screen
    mov     word dos_ptr+2,ax                     ; segment of BIOS
    mov     es,ax                                 ; es points to BIOS segment
    mov     ax,es:[bx]                           ; get offset of screen

```

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Helpful Hint . . .

## Page Numbering At The Top

*WordStar* users who do term papers requiring page numbers at the tops of pages may have noticed the instructions for doing so were omitted from our manual. Trial and error came up with this; for page numbers starting on Page 2, type ".pn2" on the first line of that page, and ".he #" on the second (if your copy is 65 columns, place the '#' in column 69; i.e., four characters over. Type ".op" on the third line to prevent duplicate page numbers from showing up on the bottoms.

George C. Glass  
Miami, FL



```

mov     off_ptr,ax      ; save for future use
mov     bx,cx           ; bx now contains ptr to
mov     ax,es:[bx]      ; green segment
mov     green,ax        ; save green screen segment
pop     es              ; restore save registers
pop     dx
pop     cx
pop     bx
pop     ax

; return with off_ptr = offset of
; the screen

get_it:
push    es              ; come here if the above code
push    bx              ; executed once
les     bx,dos_ptr      ; load es:bx with ptr to offset
mov     bx,es:[bx]      ; load bx with offset of screen
mov     off_ptr,bx      ; save offset in off_ptr
pop     bx
pop     es

; return with off_ptr = offset of
; the screen

; calculate screen offset and bit mask
;
;   input  dx= y value
;          cx= x value
;

```

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; output bx= screen address

; al= bit mask

screen:

```
call    calc_off      ; get current state of video RAM
cmp     dx,2000        ; check if y value off the screen
jnc     bad_cord      ; exit if off the screen
cmp     cx,640         ; check if x value off the screen
jnc     bad_cord      ; exit if off the screen
push    cx             ; save x value
push    dx             ; save y value
push    ax             ; save color
mov     ax,dx          ; load ax y value
and     ax,0fffch      ; int(y/4)*4
shl     ax,1           ; *8
shl     ax,1           ; *16
shl     ax,1           ; *32
shl     ax,1           ; *64
mov     bx,ax          ; save tmp
shl     ax,1           ; *128
```

```
shl     ax,1           ; *256
add     bx,ax          ; *320  bx=int(y/4)*320
```

```
mov     ax,cx          ; load ax with x value
and     ax,0fff8h      ; int(x/8)*8
shr     ax,1           ; /2  ax=int(x/8)*4
add     bx,ax          ; bx=int(y/4)*320+int(x/8)*4
```

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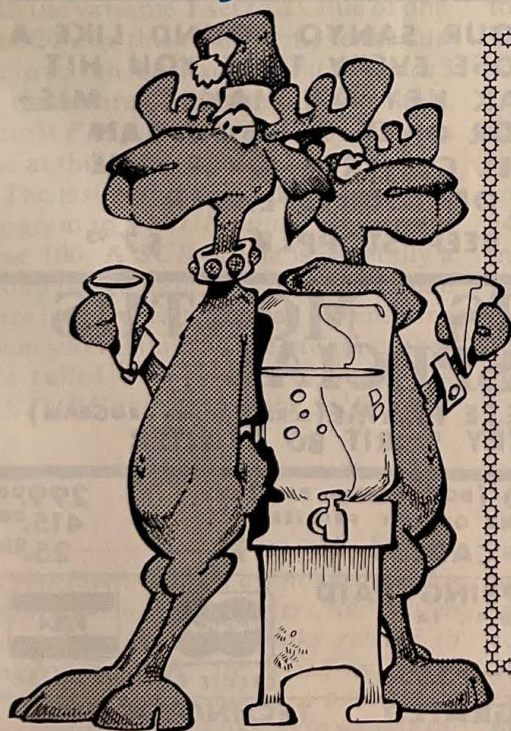


```

;
mov     ax,dx                ; load ax with y value
and     ax,3                 ; y mod 4
add     bx,ax                ; bx=int(y/4)*32+int(x/8)*4+y mod 4
;
mov     dx,bx                ; save screen offset
mov     bx,cx                ; load bx with x value
and     bx,7                 ; x mod 8
pop     ax                   ; restore color
mov     al,bit_mask[bx]      ; get rotated bit mask
mov     bx,dx                ; restore screen offset
add     bx,off_ptr           ; add on current offset
and     bh,03fh              ; keep bx on the screen
;
pop     dx
pop     cx
ret                             ; return bx= ptr to screen
                                ; al= bit mask
;
bad_cord:
    stc                      ; carry flag if off the screen
    ret
; set the dot on the screen
;
; input dx= y value
;      cx= x value
;      ah=color
;
; output dot set on the screen
;

```

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```

set_dot:
    call    screen                ; compute screen offset and mask
    jc      bad_cord             ; return to caller with bad cord
    push    es
    mov     dh,ah                 ; dh has the color
    mov     ah,al                 ; ah and al has the bit mask
    not     ah                    ; flip the bits in ah
    mov     es,blue               ; es has the blue segment
    and     es:[bx],ah            ; force blue bit off
    shr     dh,1                  ; see if blue should be on
    jnc     no_blue               ; jmp if no blue
    or      es:[bx],al            ; set blue pixel on

no_blue:
    mov     es,green             ; es has the green segment
    and     es:[bx],ah            ; force green bit off
    shr     dh,1                  ; see if green should be on
    jnc     no_green             ; jmp if no green
    or      es:[bx],al            ; set green pixel on

no_green:
    mov     es,red                ; es has the red segment
    and     es:[bx],ah            ; force red bit off
    shr     dh,1                  ; see if red should be on
    jnc     no_red               ; jmp if no red
    or      es:[bx],al            ; set red pixel on

no_red:
    pop     es                    ; restore es
    or      al,al                 ; turn off carry
    ret

```

5

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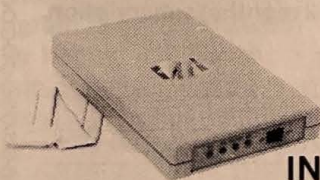
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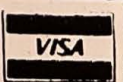
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## Subroutines, Branching And While/Wend Loops

**B**eginning this month where we departed last, we now have ample knowledge of *FOR/NEXT* loops and are ready to continue with *SUBroutines*, branching and *WHILE/WEND* loops.

### Subroutines

**A**fter booting your system and entering BASIC, type Listing 1 into your computer. When you *RUN* it, you'll see a display like Figure 1 at one point during its operation.

Line 10 initiates a *FOR/NEXT* loop with the variable *Y* set to a value of one. Line 20 uses this value to move the cursor to screen line 1 and character space 3 (*Y* times three) along that line to start. Here it *PRINTs* the value of *Y*, which is one at this time.

The last part of Line 20 branches the program to a "*SUBroutine*" starting at Line 100. A *SUBroutine* is generally a group of program lines used more than once in a program. Instead of repeating them several times in the program, they are called with a *GOSUB* and use a *RETURN* at the end of the *SUBroutine*

to return the program to the point at which it branched away.

Line 100 *LOCATEs* the cursor at screen line 25 (the last screen line) and positions it three spaces along that line, since *Y* is still equal to one, and the second *LOCATE* parameter (the horizontal position on the line) is *Y* times three. At this position a heart symbol, held in the computer character generator as *CHR\$(3)*, is *PRINTed*. You can use a different number if you wish. Most characters are available directly from the keyboard, but those below 32 require the *CHR\$(x)* call.

Line 110 ends the *SUBroutine* with a *RETURN* and the program goes back to see if there is anything else on Line 20. There isn't, so the program continues on to program Line 30.

The *NEXT Y* on Line 30 checks the value of *Y* to see if it has exceeded the limit specified when the loop was initialized on Line 10 — a maximum value of 24. Its value is still only one, so it increments to a value of two and Line 20 is processed again. This time the number two is printed on screen line 2 and six spaces (*Y* times three) over from the left side.

### Time Delay Loop

The program continues looping from Line 30 back to Line 10, going through the *SUBroutine* at Lines 100 and 110 each time. With each loop, another number appears stairstepping down the screen and another heart symbol is added at the bottom screen line. When *Y* finally reaches a value of 25, thus exceeding the limit set in Line 10, the program goes on to Line 40 which branches to the *SUBroutine* at Line 200.

The *FOR/NEXT* loop on Line 200 literally counts to itself, since the *NEXT D* immediately follows. This is a method of having the computer delay the next action. A count of 500, such as we have here, takes about .6 seconds. This leaves the screen display static for that period. Line 210 then clears the screen and *RETURNS* to the next program instruction — Line 50 in this case.

### Negative STEPs

Lines 50 through 80, together with the *SUBroutine* in Lines 100 and 110, operate similarly to Lines 10 through 40, except the counting is backwards (*STEP -1* in Line 50.) Line 90 branches back to Line 10 to repeat both sequences again. This continues until you press the *BREAK* key.

### Printing The Program

Changing the three *PRINT* statements in this program to *LPRINT* will not duplicate the screen output on your printer because the *LOCATE* statements are ignored by the printer. Use Listing 2 for a printout that will look like the screen created by Listing 1.

Notice that *CHR\$(144)* in the printer I used (Super 5 CP80) has the heart symbol for the printer. Your printer may not be able to duplicate the symbol you use for the screen's bottom line. I

(Fred Blechman, an acknowledged authority on home computers, has written several articles and books related to microcomputers. He is self-taught in electronics and computer BASIC programming, and specializes in writing for beginners.)

*Note: This article is based on material from a forthcoming book by the author, Sanyo MBC-550/555 Beginner/Intermediate Guide, soon to be published by Holt, Rinehart and Winston, a division of CBS College Publishing.*

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chose a symbol (the heart) that was  
available on both the screen and printer.

## Branching

**B**y now you should be able to look at  
a simple BASIC listing and have an  
idea of what's happening. Look at List-  
ing 3. You probably won't even have to  
type this into the computer to follow the  
description of how it works.

## Error Trapping

There are two new things in this list-  
ing. The first is shown in Line 50, where  
the strange looking left and right arrow-  
heads appear. These are the symbols  
respectively, for "less than" and "greater  
than." This line says, "IF the value of  
variable *A* is less than one or greater  
than nine, then *PRINT* . . . etc., and  
then *GOTO* program Line 40."

This is a form of "error trapping" and  
forces the user to enter the range of  
numbers requested by Line 40. Sanyo  
BASIC also supports error trapping using  
the keywords *ERROR*, *ERR* and *ERL*.  
These are generally not used by begin-  
ning programmers.

## Conditional Expressions

Error trapping using the conditional  
expressions *AND* and *OR* with the  
greater-than or less-than symbols is  
quite common and easy to follow. Other  
"logical" expressions, such as *EQV*,  
*IMP*, *NOT* and *XOR* are mostly used in  
advanced programming where the rea-  
soning becomes convoluted, so they are  
not covered here.

## What ELSE?

Normally, if an *IF* statement is not  
true, anything following on that pro-  
gram line is completely ignored. How-  
ever, the keyword *ELSE* can be used at  
the end of an *IF* statement to offer an  
alternative, such as:

```
IF X=100 THEN X=0 ELSE X=X+1
```

This is a simple way to increment a  
number to a specified limit and then  
reset it. This line says, "If *X* has reached  
the value of 100, then reset it to zero,  
otherwise add one to it." Think of the  
word *ELSE* to mean "otherwise."

## ON/GOTO Branching

Getting back to Listing 3, Line 70  
needs explanation. The *ON A GOTO*  
means, "Using the value of *A*, *GOTO*  
the line specified by that position among  
the numbers to follow." It sounds con-

fusing, but it's very simple. Suppose var-  
iable *A* has a value of three as a result of  
you pressing the '3' key to respond to the  
prompt generated in Line 40. The com-  
puter looks at the third number that  
follows *GOTO* (in this case, 300) and  
*GOes TO* that program line. If *A* was  
five, the fifth number (500) would have  
become the target.

If the value of *A* is not a whole  
number, then the rounded whole num-  
ber will be used. In other words, 3.49  
will be rounded down to three and 3.5  
will be rounded up to four.

This is just another form of branch-  
ing. There is no rule that the line  
numbers following *GOTO* must be in  
ascending order or that they be assigned  
numbers that are multiples of 100. It's  
just good form, when designing your  
program, to program in "modules" start-  
ing with multiples of 100 or 1000—but  
the choice is yours. Also, it makes the  
*ON/GOTO* easier to follow if the num-  
bers are in some logical sequence, pro-  
vided the program requirements allow  
it.

Lines 100-900, of course, tell the "for-  
tune," easily read directly from *PRINT*  
statements. You can make the whole  
program more interesting using random  
numbers, coming up next.

## Random Numbers

Sanyo BASIC will produce random  
numbers with the *RND* keyword. The  
numbers generated will be from above  
zero to less than one. To convert them  
to a range of usable numbers, you can  
multiply by a range number. For exam-  
ple, to set a random value range for *X*  
from zero to nine (but not including  
zero or nine), use *RND\*9*. However,  
this will give you numbers with many  
decimal places, and most of the time  
you want integers, so use this instead:

```
X=INT(RND*10)
```

Notice that the number multiplying  
the *RND* number is one greater than the  
range you require, since the *INTEger*  
command rounds numbers downward  
to the next whole number.

Most computers generate pseudo-  
random numbers. That is, they repeat  
the same sequence each time the com-  
puter is turned on. Some generate the  
same random number table each time  
*RUN* is used. Sanyo BASIC is the former  
type, only repeating on power-up.

To avoid duplication on the first  
*RUN* from power-up, *RANDOMIZE*  
is used. This initializes the random  
number table at a point established by



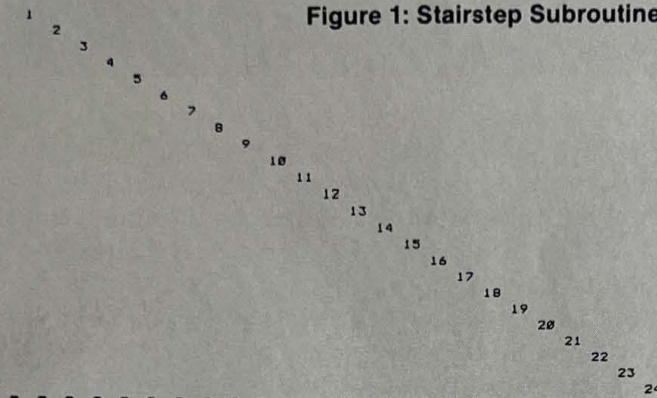
the number used with *RANDOMIZE*, such as *RANDOMIZE(100)*. This is unfortunate, since if you power up and then use *RANDOMIZE* with the same number as the last power-up, *RND* will produce exactly the same number sequence as on last power-up!

About the only way around this is to query the user to enter a "random number" (like their age or street address — any number up to 32767) to be used with *RANDOMIZE* at the beginning of the program.

turely escape from a *FOR/NEXT* loop you need a conditional statement (*IF*). The *WHILE/WEND* loop includes this condition in the *WHILE* part, without the limit imposed by the maximum count of a *FOR/NEXT* loop. Type in Listing 5 for an example.

Line 10 establishes a starting value for the variable *X*, which must be greater than the value required by the following *WHILE* statement. The *WHILE* in Line 20 tells the computer to continue operation between here and the next *WEND*

Figure 1: Stairstep Subroutine



### Random Fortunes

To illustrate the use of *RANDOMIZE* and *RND*, look at Listing 4. You'll see the strong similarity to Listing 3, but Lines 40-55 have changed, and the *GOTO 30* at the end of Lines 100-900 has changed to *GOTO 50*.

Line 40 asks you to enter your birth month and day. You do this with two entries, with a comma between them, or you'll get a "Redo from start" Error on the screen, the computer's way of telling you that you somehow did not satisfy the *INPUT* request. Since this is a multiple *INPUT* statement with two variables asked for (*M* and *D*), you must have two entries — and a comma between them.

Line 45 multiplies the two entries for the *RANDOMIZE* "seed" number. The number asked for by Line 50 is just a "dummy" *INPUT*, since it is not used in the program. This is a method of stopping the program and letting the user make a choice. Actually, the value of *A* used in Line 70 is established by the *RND* statement in Line 55.

### WHILE/WEND Loops

Not very popular, compared to the *FOR/NEXT* loop, is the very similar *WHILE/WEND* loop. To prema-

statement (Line 50) so long as the value of *X* is greater than a value of 10.

Line 30 establishes a value for *X* equal to the integer of a random number between zero and 499 and Line 40 prints that value of *X*.

The *WEND* in Line 50 checks the value of *X* to see if it still fulfills the requirements of the previous *WEND* statement. Whenever the value of *X* is 10 or less, the program falls through the *WEND* statement and *PRINTs* the statement in Line 60 confirming the value of *X*.

*WHILE/WEND* loops can be nested, but they are not as easy to understand as *FOR/NEXT* loops. There are certain conditions where *WHILE/WEND* loops have an advantage over *FOR/NEXT* loops, mostly in advanced BASIC programs. My suggestion is that you concentrate on understanding *FOR/NEXT* loops, which are much more common, and just be aware that *WHILE/WEND* accomplishes essentially the same thing.

### Coming Up

We may have left a few of you behind by jumping ahead of screen formatting and use of the *PRINT* command. Next month, we have some catching up to do.

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### Listing 1: Stairstep Subroutine

```

10 FOR Y=1 TO 24
20 LOCATE Y,Y*3:PRINT Y:GOSUB 100
30 NEXT Y
40 GOSUB 200
50 FOR Y=24 TO 1 STEP -1
60 LOCATE Y,Y*3:PRINT Y:GOSUB 100
70 NEXT Y
80 GOSUB 200
90 GOTO 10
100 LOCATE 25,Y*3:PRINT CHR$(3);
110 RETURN
200 FOR D=1 TO 500:NEXT D
210 CLS:RETURN

```

### Listing 2: Printer Output

```

10 FOR X=1 TO 24
20 LPRINT TAB(X*3)X
30 NEXT
40 FOR X=1 TO 24
50 LPRINT TAB(X*3)CHR$(144);
60 NEXT:LPRINT

```

### Listing 3: Fortune Teller

```

10 CLS:PRINT:PRINT
20 PRINT TAB(20)"YOUR SANYO 550/555 FORTUNE TELLER"
30 PRINT:PRINT
40 INPUT"PRESS ANY NUMBER FROM 1 TO 9";A
50 IF A<1 OR A>9 THEN PRINT"1 TO 9 ONLY, PLEASE.....TRY AGAIN":GOTO 40
60 PRINT:PRINT
70 ON A GOTO 100,200,300,400,500,600,700,800,900
100 PRINT"You will be rich and famous.....":GOTO 30
200 PRINT"You are about to meet a tall, dark stanger.....":GOTO 30

```

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```

300 PRINT"Be careful driving today.....":GOTO 30
400 PRINT"My crystal ball is cloudy. Sorry.....":GOTO 30
500 PRINT"Beware of strangers bearing gifts.....":GOTO 30
600 PRINT"Help! I'm captive in a small gray computer.....":GOTO 30
700 PRINT"Cross my palm with some silver first, Bud!":GOTO 30
800 PRINT"Before I tell your fortune.....is your insurance paid up?":GOTO 30
900 PRINT"You don't really want to know.....":GOTO 30

```

#### Listing 4: Random Fortunes

```

10 CLS:PRINT:PRINT
20 PRINT TAB(20)"YOUR SANYO 550/555 FORTUNE TELLER"
30 PRINT:PRINT
40 INPUT"What is your birthday (Month, Day)";M,D
45 RANDOMIZE(M*D)
50 PRINT :PRINT :INPUT"Enter any number.....";A
55 A=RND*9
60 PRINT:PRINT
70 ON A GOTO 100,200,300,400,500,600,700,800,900
100 PRINT"You will be rich and famous.....":GOTO 50
200 PRINT"You are about to meet a tall, dark stranger.....":GOTO 50
300 PRINT"Be careful driving today.....":GOTO 50
400 PRINT"My crystal ball is cloudy. Sorry.....":GOTO 50
500 PRINT"Beware of strangers bearing gifts.....":GOTO 50
600 PRINT"Help! I'm captive in a small gray computer.....":GOTO 50
700 PRINT"Cross my palm with some silver first, Bud!":GOTO 50
800 PRINT"Before I tell your fortune.....is your insurance paid up?":GOTO 50
900 PRINT"You don't really want to know.....":GOTO 50

```

#### Listing 5: While/Wend Loop

```

10 X=11
20 WHILE X>10
30 X=INT(RND*500)
40 PRINT X,
50 WEND
60 PRINT"The value of X is now";X;". "

```



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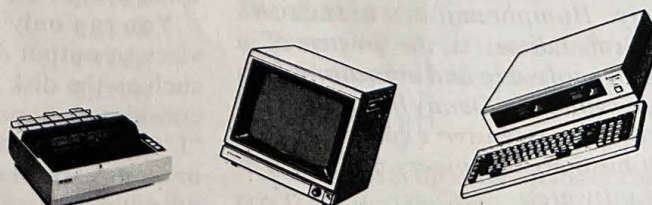
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# Passing Through COPY And Into EDLIN

If you've followed this series for the past three months, you are already familiar with the fundamentals of our favorite operating system, MS-DOS. You've learned about files and directories and you've begun to use commands that manipulate files. To date, the files that we've been working with have been those that were on our MS-DOS disk when we received it. This month, we're going to learn how to create files using a special feature of the *COPY* command and MS-DOS's built-in "mini-word processor," *EDLIN*.

## The Many Faces Of COPY

We learned that *COPY* will make a copy of a single file or group of files from one disk to another. It will also allow you to have two copies of a file on the same disk as long as both copies have different names or are in different directories (more on directories later).

The great thing about *COPY* is that it's not limited to just files. Remember the very first MS-DOSier when we discussed how a computer is a combination of *devices* such as a disk drive, keyboard, printer and display. *COPY*'s

main function is to copy data from one device to another. Granted, the devices that *COPY* usually uses are the disk drives, but it can do much more than that. Take a look at this command line.

**COPY A:PAYROLL.DAT B:**

You'll remember from last month that this command will copy the file called *PAYROLL.DAT* from drive A: to drive B:. The 'A:' and 'B:' in this command line are device names for the two disk drives (refer to Mastering MS-DOS, Part I). We could easily substitute just about any other device name for A: or B:. For example:

**COPY A:PAYROLL.DAT PRN:**

This command would copy *PAYROLL.DAT* from drive A: to the line printer since "PRN:" is the device name for the line printer. The contents of the file would be printed by the printer. See if you can deduce what the following command would do:

**COPY PRN:PAYROLL.DAT A:**

Of course, it would copy *PAYROLL.DAT* from the printer to drive A:. Wait a minute! You can't copy a file *from* a printer, the printer is an "output only" device. There are some cases, like that above, that are not logically valid, so think about what you're trying to do when using *COPY* this way.

You can only *COPY* from input devices to output devices. Some devices, such as the disk drives (A:, B:, C:) are considered "input/output" devices, or "I/O," and can be used for either input or output. Another example of an input/output device is the "console." The con-

sole (CON:) is the logical device name of the keyboard and display combination. Input from the console comes from the keyboard (of course), and output goes to the display screen.

Given what you know about the CON: device, determine what the following command line would produce:

**COPY A:PAYROLL.DAT CON:**

The contents of *PAYROLL.DAT* on drive A: would be "copied" to the display. In effect, the data in the file would be displayed on the screen. This can be very useful when you want to see what's contained in a file. Since this is something that is so often needed, the creators of MS-DOS provided us with an easier to use alternative to this with the *TYPE* command. For now, though, our concerns are with *COPY*.

Think about this command:

**COPY CON: A:TESTFILE**

This would copy whatever is entered from the keyboard to *TESTFILE* on drive A:. If the file was not previously on the disk, it will be created. If it is on the disk, the contents will be erased in favor of the new data that is being entered.

When you use *COPY* this way, the cursor drops down one line and you can type anything you like. As you type, the data is written to the file on the disk. When you are finished, you type the "end-of-file" character, CONTROL-Z, which tells the *COPY* command that it has "read" all the data from the keyboard.

Let's try a practical example of this function of *COPY*. With a backup of

(Danny Humphress, *SOFT SECTOR's* Technical Editor, is the owner of a computer software and consulting firm in Louisville, Ky. Danny brings to *SOFT SECTOR* his extensive experience with small business computers and applications software.)



**By Danny Humphress**  
**Soft Sector Technical Editor**

your MS-DOS master diskette in drive A:, type the following:

```
COPY CON: A:TESTFILE ENTER
REAGAN                ENTER
CARTER                 ENTER
FORD                   ENTER
NIXON                  ENTER
JOHNSON                ENTER
KENNEDY                ENTER
CONTROL-Z
```

When you press CONTROL-Z, the file is saved to the disk and control is returned to MS-DOS. To get CONTROL-Z, hold down CONTROL and strike 'Z'. Use the CONTROL key as you would SHIFT.

You've created *TESTFILE* on drive A:. If you don't believe it, type this command to display the contents of the file on the screen:

```
COPY A:TESTFILE CON: ENTER
```

Aren't computers wonderful!

*COPY* is often used to create short files on a disk. The problem is that once you have the file on the disk, the only way that *COPY* could change it would be to retype the entire file. This is fine for short little files, but for a larger one, you need a more powerful command.

#### Enter *EDLIN*

*EDLIN* is a line-oriented word processor. It is not actually a built-in MS-DOS command, but an entire program with commands of its own. In addition to the file creation ability found in *COPY*, *EDLIN* allows you to edit or add on to existing files.

Let's use *EDLIN* to create a file that we'll call *FILE2* (how imaginative). To

start editing *FILE2* with *EDLIN*, type this command:

```
EDLIN A:FILE2 ENTER
```

This tells *EDLIN* that we are working with *FILE2* on drive A:. If the file was not already in the directory (as in this case), it would be created; otherwise, it would be loaded into memory and we'd be allowed to edit it.

*EDLIN* will display the following:

```
New file
* _
```

The asterisk (\*) is the *EDLIN* prompt. It tells you that *EDLIN* is waiting for your command. *EDLIN* has its own set of commands totally different from those used in MS-DOS. The first thing we want to do is to "insert" data into this newly created file. The command for insert is 'I'. Type:

```
I ENTER
```

The screen should now look like this:

```
New file
*I
1: _
```

The "1:\*" tells you that you are working on line one of the file.

Type these lines:

```
BANANA SPLIT ENTER
APPLE PIE    ENTER
PEAR PUDDING ENTER
CHERRY SODA  ENTER
PEACH MELBA  ENTER
GRAPE JUICE  ENTER
```

When *EDLIN* displays the next line number (7:\*), press CONTROL-C. This

exits the insert mode and returns you to the asterisk prompt.

Now tell *EDLIN* to display the third line by typing:

```
3 ENTER
```

The screen will look something like this:

```
*3
3:*PEAR PUDDING
3: _
```

You may now make changes to this line or press ENTER to return to the *EDLIN* command prompt.

Let's change "PEAR PUDDING" to "PLUM PUDDING." Personally, the idea of plum pudding is no more appetizing to me than pear pudding, but just for example's sake . . .

Press the right arrow key [→] once. The letter 'P' should appear and the cursor will move one space to the right. This key tells *EDLIN* to copy one character from the "template" (the original line) to the new line.

Now type "LUM" to finish the letters of "plum." When you type a character, you overwrite the corresponding character in the original line.

We are now up to the space in the template. At this point, we could just press ENTER and the line would read "PLUM," or we could continue editing. We want to continue.

Press [→] three times and the line should now look like this:

```
3:*PLUM PU _
```

You've just copied three more characters from the template, the space and 'P' and 'U.' You could continue to use the



right arrow key until the line reads "PLUM PUDDING," or you could use a special function to copy to the end of the template. Press the PF3 function key.

The cursor will jump over and the screen will now look like this:

```
3:*PLUM PUDDING__
```

Press ENTER to store this updated line.

EDLIN also allows you to insert characters into a line template. Let's change "BANANA SPLIT" to "BANANA NUT SPLIT." We need to insert "NUT" and another space between "BANANA" and "SPLIT." "BANANA SPLIT" is in line one of the file, so we need to tell EDLIN to allow us to edit that line by typing:

```
1      ENTER
```

The screen will look like this:

```
*1
1:*BANANA SPLIT
1:*
```

Press [-] five times to reveal the word, "BANANA." The screen will now look like this:

```
*1
1:*BANANA SPLIT
1:*BANANA__
```

Locate the INSERT key (marked "INS" above the ENTER key) and press it in conjunction with the SHIFT key. You have turned on the "insert mode." Any characters you type now will be inserted into the template instead of replacing template characters. When you press INSERT again, you turn off the insert mode.

Press the space bar once and type the word "NUT." The screen will now appear as this:

```
*1
1:*BANANA SPLIT
1:*BANANA NUT
```

A space and the word "SPLIT" is remaining in the template.

Turn off the insert mode by pressing INSERT. Now press PF3 to copy the remaining characters from the template into the edit line and you'll see this on your screen:

```
*1
1:*BANANA SPLIT
1:*BANANA NUT SPLIT__
```

Press ENTER to store the edited line. Do we really want nuts on our split? Let's take them off and save the calories! Press 'I' and ENTER to edit line one. Press the [-] key seven times to copy the word "BANANA" and a space to the edit line. The screen will look like this:

```
*1
1:*BANANA NUT SPLIT
1:*BANANA__
```

We now want to delete the next four characters ("NUT" and a space). This is quite simply done by pressing the DELETE key (same as INSERT, but unshifted) four times. Each time you press DELETE, a corresponding character is removed from the template.

Press PF3 to copy the remaining characters from the template and your screen will look like this:

```
*1
1:*BANANA NUT SPLIT
1:*BANANA SPLIT__
```

Press ENTER to enter the edited line into our file.

By now, our screen is full of lines of

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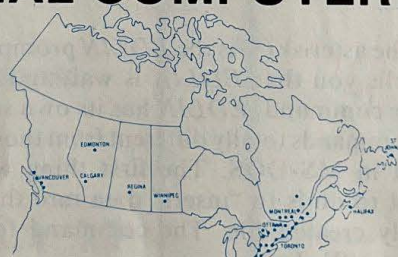
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editing and we cannot see the other lines of the file. This is no problem. One of the commands available to you in *EDLIN* is the 'P' (Page) command. 'P' allows you to list a series of lines to the screen. Type this:

P ENTER

Since line one was the last line we worked on, it is the "current" line. 'P' will display the list we entered.

If you don't tell 'P' otherwise, it will list a page (a screen full) of lines starting with the line after the current line. If the current line is one (as is the case here), then it is the first line listed. Like most single-letter commands available in *EDLIN*, 'P' allows you to specify a beginning and ending line number for a range. The format for 'P' is:

[line 1],[line2]P

where [line1] and [line2] are optional line numbers. Try this:

1,3P ENTER

This tells *EDLIN* to list lines one through three and the screen will look like this:

\*1,3P

1: BANANA NUT SPLIT

2: APPLE PIE

3: \*PLUM PUDDING

\* \_

Notice the asterisk at the third line. The asterisk marks the current line. When you use 'P', the current line is changed to the last line displayed.

If you omit the second line number, 'P' assumes that you want to print to the end of the file or until the screen is full. Try this:

3P ENTER

*EDLIN* will list the file starting with the third line. The current line is now line six.

If you omit the first line number, 'P' will assume that you want to begin with the line following the current line. The format to do this would be:

,nP

The 'n' would be a legitimate line number. The comma tells *EDLIN* that we are not specifying a starting line. The current line is now six (the last line), so it

won't do much good to use this format of 'P' now.

Up to this point, everything we've done has been in the computer's memory. The idea is to get this stuff into our disk file. This happens when we exit *EDLIN* by pressing 'E' and ENTER. 'E' (End) saves the memory contents and returns control to MS-DOS. Go ahead and press 'E' to save our file and get out of *EDLIN*.

Another way of exiting *EDLIN* is 'Q' (Quit). This command returns to MS-DOS without saving the changes that were made to the file.

There are many more commands available with *EDLIN* than we have room to discuss this month. Some of the goodies available let you move lines around, search for words in the file, globally replace words, and so many other nifty things. We'll take a look at those in December. Until then, get brave and do some exploring on your own. The "EDLIN" section of your *Operator's Guide* or MS-DOS manual should make more sense to you after what you've done today.



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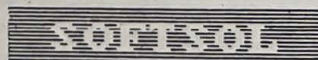
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Completing this informative series this month, we look at a few more issues that have been clouding the 'Star' field

# INFOSTAR

## Shine On, Shine On

By Charlotte A. Stone  
Soft Sector Contributing Editor

In last month's issue of *SOFT SECTOR* we made up a report to print mailing labels using *ReportStar*. Let's use the format from that report as a starting point and see how we can generate labels on sheets with two across the page. It looked like this:

```

_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
  
```

The fields were numbered left to right, top to bottom like this (*ReportStar* numbers them for you this way):

```

_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
      (1)      (2)      (3)      (4)      (5)
  
```

I won't repeat the entire process of setting up a mailing list report. Please refer to last month's column if you have any questions. We will pick up the process at *REDIT*'s report layout screen. If you used our example from last month, the following commands will let you change that report to print two columns of labels.

Type *REDIT MAILABEL* and press RETURN. When the file definition screen is displayed, press CONTROL-C.

The report layout screen will be displayed. Draw an identical pattern of fields to the right of the set we had before. You must allow enough spaces between the first pattern and second pattern to set a margin for the printing of the second column of labels. For standard 3½-inch labels and the same size fields we used before, we need eight spaces between the last digit of the ZIP code field of the left-hand pattern and the first digit of the right-hand pattern, like this:

```

_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
  
```

Eight spaces between here → | ← and here.

These old and new fields are now numbered as follows:

```

_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
      (1)      (2)      (3)      (4)      (5)      (6)      (7)      (8)      (9)      (10)
  
```

All of the dot commands and print control commands we set up last month can stay the same as before. Since we have added fields and the numbering of the fields is different, we must define all of the new fields. Move the cursor into field one and press CONTROL-R. By pressing RETURN a number of times to run through the field definition prompts, you will find that it is still named and defined as before. Press CONTROL-F to move the cursor into field two, then press CONTROL-R. The first prompt is:

Field number/name: 002/

Press RETURN to enter the field number 002, then type in a field name. In this case, *NAME 2* would be appropriate. Press RETURN to enter the field name *NAME 2*. The next prompt is:

Equivalent to field:

Type 001 and NAME will appear on the other side of the prompt slash. Press RETURN to enter 001/NAME as the equivalent field. All the rest of the definition of field two will be recorded exactly the same as field one.

Field three is still correctly defined as ADDRESS. Press CONTROL-F twice to move the cursor into field four, then press CONTROL-R. The following prompt will appear:

Field number/name: 004/

Press RETURN to enter the field number 004. Then type

(Charlotte A. Stone, office manager for the Detroit office of the Shaw/Walker Co., has been using a Sanyo 555 in her daily work for the past nine months. She and her husband, Brian, have owned and used computers since their first purchase in July 1978; they presently own four systems.)

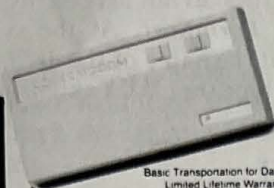




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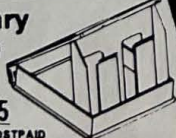
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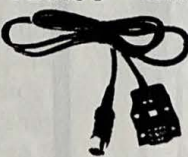
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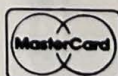
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ADDRESS 2 and press RETURN. For "equivalent to field," type 003, then press RETURN when ADDRESS appears after the slash. Field four will be exactly the same as field three.

Using the same method, move the cursor to field eight. Press CONTROL-R and then press RETURN at the prompt. Name field eight CITY 2, equivalent to field 005/CITY. Now name field nine STATE 2, equivalent to field 006/STATE, and name field 10 ZIP CODE2, equivalent to field 007/ZIP CODE.

You should be back to the report layout screen. Press CONTROL-C to say "Form Done." When the exit screen comes up, enter one of the exit commands 'C' or 'S' to save the report.

This report will print side-by-side labels — one for each name in your data file.

Whenever you enter new data into a file, even the initial entry into a brand new data file, it makes no sense for you to take the time to sort your information into the order in which you want to retrieve it when your computer can do that chore much faster. There were no instructions about sorting with *InfoStar* in my first column.

After entering a batch of data, before running a report, it is necessary to sort the data file to rearrange the records into the order designated by the key field. *DataStar* has a file maintenance function to do this, but there is a faster way that came on your *ReportStar* disk — *FormSort*. Besides rearranging records, it will purge your data files of unwanted records that you marked for deletion with *DataStar*, thus giving you more disk space. The commands are easy. Once

you use it, you won't want to go back to using *DataStar*'s file maintenance utility.

Let's say you have finished entering data in your mailing list data file (*MAILLIST.DTA*) and you want to sort the file. You must have a disk containing *FORMSORT.COM* and *FORMSORT.OVR*. If you have a two-drive system, your definition, data and index files do not necessarily have to be on the same disk with *FormSort*. At the system prompt, type *FORMSORT* and the name of the definition and datafile to be sorted. Don't type the .XXX extension on the filename. For example:

A>FORMSORT MAILLIST

If the definition file is on drive B, add "B:" to the front of the filename:

A>FORMSORT B:MAILLIST

If your data file is not on the same drive as the definition file, this message will appear on the screen:

Enter Disk drive to use for the Data file (MAILLIST.DTA) (A,B . . .)—

Type the letter of the drive with the .DTA file and *FormSort* will start running. This message will appear, but it does not mean you have made an error in this case:

No Input Files Specified. Input File Assumed Same As Output File.

*FormSort* will sort the data file into the correct order,

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erase any records deleted in *DataStar*, and make a new index file for the data file.

Now run your *MAILABEL* report and the labels will be in the correct order.

Maybe it's an alphabetic list you want rather than one sorted by the ZIP code. The definition file we used for our favorite example, *MAILLIST*, would be fine for an alphabetic list of companies. For individuals, we would need a separate field for a last name. Let's use *MAILLIST* anyway; even though you know it inside out by this time, it's simple.

Make a copy of *MAILLIST.DEF* and rename it. How about *MAILIST2.DEF* for a new name. Check the manual for your operating system if you don't know the commands to do this.

Next we're going to make a change in *MAILIST2* to make it different from *MAILLIST*. At your system prompt, type *FORMGEN MAILIST2* and press RETURN.

The data entry mask will come up on the screen. Notice that the ZIP code field is a line of asterisks indicating that it is the key field. Move the cursor into the name field and press CONTROL-K. The name field will change to asterisks. Now move the cursor into the ZIP code field and press CONTROL-K. The line of asterisks will change back to underlines. Now you have a new key field that will sort alphabetically by name. Save this new form by pressing CONTROL-CB and exit to your operating system.

The next step is to sort your old data file into a new order to match your new definition file. As in the previous ques-

tion, *FormSort* makes it easy. The command format looks like this:

```
A>FORMSORT [Output.def filename] [Input.def filename]
```

Output is the new sort order you want (*MAILIST2*); input is the existing or old sort order (*MAILLIST*). Once again, you don't need to type the *.DEF* extension. If you have two drives, you may want to put the output file on the second drive. The new data and index files will be written to whichever drive has the new definition file. It can be done on one drive if your disk is not too full. We will use the command for two drives:

```
A>FORMSORT B:MAILIST2 MAILLIST
```

If the input data file (*MAILLIST.DTA*) is not on drive A, a prompt will ask for the drive it is on. Otherwise, *FormSort* will be underway. When it is finished, you will have two data files and two index files to match your two definition files. They will contain identical information, but sorted in a different order. Try running the *MAILABEL.RPT* program on paper instead of labels to see the difference.



**Editor's Note:** Next month, Charlotte and Brian Stone will begin a column answering questions that readers might have dealing with applications programs. Questions should be addressed to SOFT SECTOR, P.O. Box 385, Prospect, KY 40059.

#### Helpful Hint . . .

### Shift Key Extension

Readers who use their Sanyo for word processing may find the reach to the right SHIFT key somewhat awkward because of the extra asterisk (\*) key. This suggestion will not enhance the appearance of the keyboard, but will appeal to people who find hitting the SHIFT key edge with their pinky uncomfortable.

The top of the SHIFT key can be widened with a blob of epoxy putty, such as Duro "E-pox-y Ribbon." Cut off a small piece of the yellow and blue material and knead it until it is uniform in color. Pull off enough to make a ball  $\frac{1}{8}$ -inch in diameter and form it to fit smoothly against the left side of the SHIFT key as shown in the accompanying photo. Shield the asterisk key with a small piece of plastic wrap to keep the epoxy from sticking to it. Make sure the epoxy extension does not press the asterisk key down when you SHIFT. If necessary, you can pull it off before it hardens completely.

George C. Glass  
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(512)  
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S Y S T E M

BY MIKE CHARLTON



**S**oon after buying a Sanyo MBC-550 I decided to convert to the new machine a payroll program that I had written for a Radio Shack Color Computer. The result of this effort is shown in Listing 1. While doing the conversion, I added a few enhancements that were missing in the original program. This program will be adequate for most small businesses with 30 employees or less and it can handle yearly salaries up to \$99,999.99. It is written for a single-drive system, but with minor modification can be made to access a second drive.

After keying in the program and debugging it, save a copy to a system disk with BASIC on it. Don't forget to make a backup copy also.

Load BASIC and then the program and delete Line 180 before running it. Do this only the first time the program is run. This line branches to the subroutine that reads the payroll data in from the disk. Since the first time you run the program there will be no data on the disk, the line must be deleted. Type *RUN* and you will be presented with the main menu. Choose the (A)dd option to enter the employee list. The program must be set up on separate disks if there are groups of employees with different pay period lengths (weekly, monthly, etc.). After entering the employee information, the data will be saved to disk automatically. Use the (L)ist option to print out a record for each employee. Check the records carefully for errors. If any are found, use the (M)ake changes option to correct them. After making changes, the data will be saved to disk automatically. Use the (L)ist option to print a new copy of any record that was changed.

For removing employees from the list, use the (D)elele option. Again, the data will be saved to the disk automatically.

You are now ready to make a payroll run. When the (C)alculate option is chosen, you will be asked for the ending date of the pay period. Enter the date in whatever format you desire to be printed on the hard copy payroll record.

Each employee record will be displayed on the screen and can be included or excluded from the run. If included, the calculation will be performed and automatically printed along with the year-to-date figures for that employee. This procedure will be repeated for each employee in the file. A

total payroll summary will be printed after the last employee. After the program returns to the main menu, the printout should be checked for errors. The data was *not* saved to disk automatically. Therefore, if errors are found in the payroll, (E)nd the program, reload the program from disk and run the payroll again. If there are no errors in the payroll, (S)ave the data to disk. You should also save a copy of the data to your backup disk. Before ending the session, you may want to (L)ist each employee record to the printer as a hard copy backup. If the payroll disk were destroyed, it could be recreated very easily from this backup. That's all there is to it, you are finished until the next pay period.

Figure 1 shows a typical printout from a payroll run for three monthly paid salaried employees. Figure 2 shows the hard copy listing of the records for the same employees.

Now for the program changes that may be required. The federal tax tables used are the ones in effect through December 31, 1984. They are in Lines 18000-19080. The FICA percentage and cutoff are good through the end of 1984. The state tax is for Kentucky and will most likely be incorrect for other states. Lines 20000-20060 must be edited for the appropriate state calculation. The calculation for city tax is in Line 12090 and is set for one percent in the variable *CT*. The "Other Tax" category is a percentage and can be set to the desired level when inputting employee records. For hourly employees, overtime is paid at 1.5 times regular pay. This can be changed in Line 12040. An enhancement that would be fairly easy to implement would be the actual printing of the payroll checks.

As with any newly computerized system, this program should be run along with the current manual payroll for several pay periods to establish confidence in it. It is also good business practice to make plenty of backups of the program and data files.

*(Mike Charlton, a process engineer in the aluminum industry, holds a bachelor's degree in chemistry and mathematics. He teaches microcomputer hardware and software in an adult education program and has been published previously in microcomputer magazines. He and his wife, Brenda, have two daughters.)*



Figure 1

Pay Period Ending 5/31/84

John Doe

EMP.#:1001

SS#:400-60-700

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
3000.00	494.83	201.00	125.39	30.00	150.00

NET PAY = 1998.78

YEAR TO DATE					
GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
18000.00	2968.98	1206.00	752.34	180.00	900.00

Pay Period Ending 5/31/84

James Doe

EMP.#:1002

SS#:400-70-600

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
3200.00	583.33	214.40	133.75	32.00	128.00

NET PAY = 2108.52

YEAR TO DATE					
GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
19200.00	3499.98	1286.40	802.50	192.00	768.00

Pay Period Ending 5/31/84

Tom Doe

EMP.#:1003

SS#:400-60-600

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
3500.00	869.17	234.50	136.27	35.00	210.00

NET PAY = 2015.06

YEAR TO DATE					
GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
21000.00	5215.02	1407.00	817.62	210.00	1260.00

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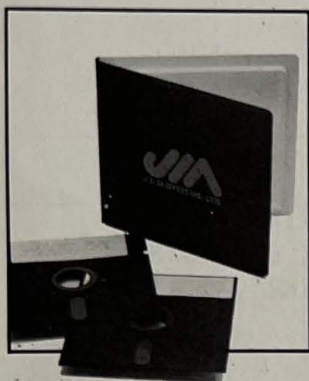
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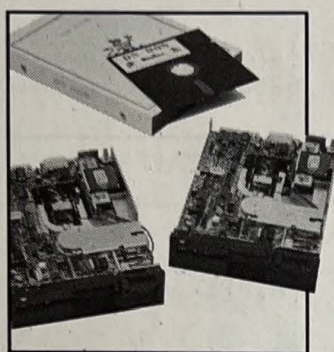


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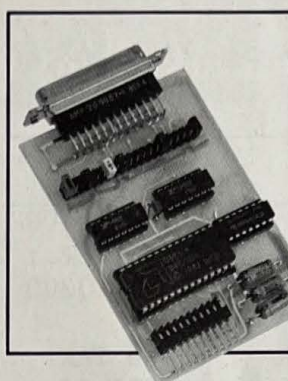
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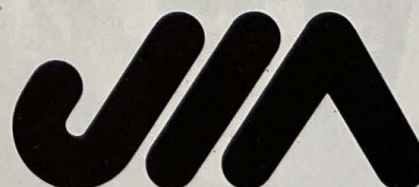
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# PAYROLL SUMMARY

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
9700.00	1947.33	649.90	395.41	97.00	488.00

Figure 2

John Doe	EMP.#:1001	SS#:400-60-700
FILING STATUS:M	NO. DEP.: 3	PAY STATUS:S
HOURLY RATE: 0	GROSS PAY: 3000	PAY PERIODS: 12
YEAR TO DATE		OTHER (%): 5

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
15000.00	2474.15	1005.00	626.95	150.00	750.00

James Doe	EMP.#:1002	SS#:400-70-600
FILING STATUS:M	NO. DEP.: 2	PAY STATUS:S
HOURLY RATE: 0	GROSS PAY: 3200	PAY PERIODS: 12
YEAR TO DATE		OTHER (%): 4

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
16000.00	2916.65	1072.00	668.75	160.00	640.00

Tom Doe	EMP.#:1003	SS#:400-60-600
FILING STATUS:S	NO. DEP.: 1	PAY STATUS:S
HOURLY RATE: 0	GROSS PAY: 3500	PAY PERIODS: 12
YEAR TO DATE		OTHER (%): 6

GROSS PAY	FED.TAX	FICA TAX	STATE TAX	CITY TAX	OTHER
17500.00	4345.85	1172.50	681.35	175.00	1050.00

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The listing:

```

100 'PAYROLL SYSTEM
110 'MIKE CHARLTON
120 '3936 YATES DRIVE
130 'OWENSBORO KY 42301
140 'JULY 1984
145 DEFDBL H,G,O,Y,F,S,C,Z,T
150 DIM EN$(30),NA$(30),SS$(30),FS$(30),ND(30),PS$(30),HR(30),GP(30)
160 DIM PP(30),OD(30),YG(30),YI(30),YF(30),YS(30),YC(30),YO(30)
180 GOSUB 10000
190 CLS:LOCATE 1,29:PRINT"* * PAYROLL SYSTEM * *":LOCATE 7,22
200 PRINT"(A)dd to or create employee list":LOCATE 9,22
210 PRINT"(L)ist an employee's record":LOCATE 11,22
220 PRINT"(D)elete employee":LOCATE 13,22
230 PRINT"(C)alculate payroll":LOCATE 15,22
240 PRINT"(M)ake changes to data":LOCATE 17,22
250 PRINT"(S)ave data to disk":LOCATE 19,22
260 PRINT"(E)nd program"
270 LOCATE 25,36:PRINT"Option?";
280 O$=INKEY$:IF O$="" THEN 280
290 ON INSTR("EALDCMS",O$) GOTO 310,1000,2000,3000,4000,5000,6000
300 GOTO 270
310 CLOSE:END
1000 'ADD EMPLOYEES
1010 IF NE<30 THEN GOTO 1040
1020 CLS:PRINT"FILE IS FULL-CAN'T ADD ANY MORE"
1030 PRINT:INPUT"PRESS ENTER FOR MENU";O$:GOTO 190
1040 CLS:PRINT"There are";NE;"employees on file."
1050 I=NE+1
1060 INPUT"Employee Number";EN$(I)
1070 INPUT"Name";NA$(I)
1080 INPUT"Social Security Number";SS$(I)
1090 INPUT"(M)arried or (S)ingle";FS$(I)
1100 INPUT"Number of Dependents";ND(I)
1110 INPUT"(S)alaried or (H)ourly";PS$(I):IF PS$(I)="H" THEN GOTO 1125
1120 INPUT"Gross Pay per Period";GP(I):GOTO 1130
1125 INPUT"Hourly Rate";HR(I)
1130 INPUT"Pay Periods per Year";PP(I)
1140 INPUT"Other Deductions (Y/N)";AN$
1150 IF AN$="N" OR AN$="n" THEN OD(I)=0:GOTO 1180
1160 INPUT"What Percentage";OD(I)
1180 NE=I
1190 LOCATE 25,1:PRINT"Another Addition (Y/N)";
1200 O$=INKEY$:IF O$="" THEN 1200
1210 ON INSTR("YN",O$) GOTO 1010,1230
1220 GOTO 1190
1230 GOSUB 11000:GOTO 190
2000 'LIST RECORD
2010 CLS:INPUT"Employee Name";N$:GOSUB 9000:PRINT:IF L=0 THEN PRINT"Name not in
file":INPUT"Press ENTER for menu";O$:GOTO 190
2020 LOCATE 3,1:PRINT"(S)creen or (P)rinter";
2030 O$=INKEY$:IF O$="" THEN 2030

```



```

2040 ON INSTR("SP",O$) GOTO 2060,2110
2050 GOTO 2020
2060 GOSUB 13000
2070 LOCATE 25,33:PRINT"ANOTHER (Y/N)?";
2080 O$=INKEY$:IF O$="" THEN 2080
2090 ON INSTR("YN",O$) GOTO 2000,190
2100 GOTO 2070
2110 LPRINT STRING$(80,95)
2120 LPRINT NA$(I);TAB(28);"EMP.#:";EN$(I);TAB(60);"SS#:";SS$(I)
2130 LPRINT"FILING STATUS:";FS$(I);TAB(28);"NO. DEP.:";ND(I);TAB(60);"PAY STATUS
:";PS$(I)
2140 LPRINT"HOURLY RATE:";HR(I);TAB(22);"GROSS PAY:";GP(I);TAB(42);"PAY PERIODS:
";PP(I);TAB(60);"OTHER (%):";OD(I)
2150 LPRINT"YEAR TO DATE"
2160 LPRINT"GROSS PAY      FED.TAX      FICA TAX      STATE TAX      CITY TAX      OT
HER"
2170 LPRINT USING"#####.##      #####.##      #####.##      #####.##      #####.##
#####.##";YG(I);YI(I);YF(I);YS(I);YC(I);YO(I)
2180 LPRINT STRING$(80,95):LPRINT:GOTO 190
3000 'DELETE EMPLOYEE
3010 CLS:INPUT"Name Of Employee To Delete";N$:GOSUB 9000
3030 PRINT:IF L=0 THEN PRINT"Name Not In File":INPUT"Press Enter For Menu";O$:GO
TO 190
3040 GOSUB 13000
3050 LOCATE 25,30:PRINT"(D)elete or (E)xit";
3060 O$=INKEY$:IF O$="" THEN 3060
3070 ON INSTR("DE",O$) GOTO 3090,190
3080 GOTO 3050
3090 FOR J=I TO NE-1
3100 EN$(J)=EN$(J+1):NA$(J)=NA$(J+1):SS$(J)=SS$(J+1):FS$(J)=FS$(J+1)
3110 ND(J)=ND(J+1):PS$(J)=PS$(J+1):HR(J)=HR(J+1):GP(J)=GP(J+1):PP(J)=PP(J+1)
3120 OD(J)=OD(J+1):YG(J)=YG(J+1):YI(J)=YI(J+1):YF(J)=YF(J+1)
3130 YS(J)=YS(J+1):YC(J)=YC(J+1):YO(J)=YO(J+1)
3140 NEXT J:NE=NE-1:GOSUB 11000:GOTO 190
4000 'CALCULATE PAYROLL
4010 CLS:LOCATE 12,1:INPUT"Ending Date Of Pay Period";DA$
4020 LOCATE 14,1:INPUT"Prepare Printer - Press Enter";O$
4040 FOR I=1 TO NE
4050 GOSUB 13010
4060 PRINT:INPUT"Include In Run (Y/N)";O$
4070 IF O$="Y" OR O$="y" THEN 4100
4080 IF O$<>"N" AND O$<>"n" THEN 4060
4090 NEXT I:GOTO 4140
4100 LPRINT STRING$(80,95)
4110 LPRINT TAB(25);"Pay Period Ending ";DA$
4120 GOSUB 12000
4130 NEXT I:GOTO 4140
4140 LPRINT STRING$(80,95)
4150 LPRINT:LPRINT TAB(32);"PAYROLL SUMMARY":LPRINT
4160 LPRINT"GROSS PAY      FED.TAX      FICA TAX      STATE TAX      CITY TAX      O
THER"
4170 LPRINT USING"#####.##      #####.##      #####.##      #####.##      #####.##
#####.##";TGP;TFT;TFI;TST;TCT;TOT
4180 LPRINT STRING$(80,95)
4190 GOTO 190
5000 'CHANGE PAYROLL DATA
5010 CLS:INPUT"Employee Name";N$:GOSUB 9000:PRINT:IF L=0 THEN PRINT"Name Not In
File":INPUT"Press Enter For Menu";O$:GOTO 190

```



```

5020 GOSUB 13000
5030 LOCATE 25,31:PRINT"(C)hange or (E)xit";
5040 O$=INKEY$:IF O$="" THEN 5040
5050 ON INSTR("CE",O$) GOTO 5070,190
5060 GOTO 5030
5070 LOCATE 25,1:PRINT STRING$(79,32);:LOCATE 24,1
5080 INPUT"Number Of Item To Change";B
5085 LOCATE 24,1:PRINT STRING$(79,32);:LOCATE 24,1
5090 ON B GOTO 5100,5110,5120,5130,5140,5150,5160,5170,5180,5190,5200,5210,5220,
5230,5240,5250
5100 INPUT"New Number";EN$(I):GOSUB 11000:GOTO 190
5110 INPUT"New Name";NA$(I):GOSUB 11000:GOTO 190
5120 INPUT"New Soc. Sec. No.";SS$(I):GOSUB 11000:GOTO 190
5130 INPUT"New Filing Status";FS$(I):GOSUB 11000:GOTO 190
5140 INPUT"New No. Dep.";ND(I):GOSUB 11000:GOTO 190
5150 INPUT"New Pay Status";PS$(I):GOSUB 11000:GOTO 190
5160 INPUT"New Hourly Rate";HR(I):GOSUB 11000:GOTO 190
5170 INPUT"New Gross Pay";GP(I):GOSUB 11000:GOTO 190
5180 INPUT"New Pay Periods";PP(I):GOSUB 11000:GOTO 190
5190 INPUT"New Other (%)";OD(I):GOSUB 11000:GOTO 190
5200 INPUT"New YTD Gross";YG(I):GOSUB 11000:GOTO 190
5210 INPUT"New YTD Fed. Tax";YI(I):GOSUB 11000:GOTO 190
5220 INPUT"New YTD FICA";YF(I):GOSUB 11000:GOTO 190
5230 INPUT"New YTD State";YS(I):GOSUB 11000:GOTO 190
5240 INPUT"New YTD City";YC(I):GOSUB 11000:GOTO 190
5250 INPUT"New YTD Other";YO(I):GOSUB 11000:GOTO 190
6000 'DUMP DATA TO DISK
6010 GOSUB 11000:GOTO 190
9000 'FIND NAME
9010 FOR I=1 TO NE
9020 L=1:IF N$=NA$(I) THEN RETURN
9030 NEXT I:L=0:RETURN
10000 'READ DATA FROM DISK
10010 OPEN "I",#1,"PAYROLL.FIL"
10020 INPUT #1, NE, DA$
10030 FOR I=1 TO NE
10040 INPUT #1,EN$(I),NA$(I),SS$(I),FS$(I),ND(I),PS$(I),HR(I),GP(I)
10050 INPUT #1,PP(I),OD(I),YG(I),YI(I),YF(I),YS(I),YC(I),YO(I)
10070 NEXT I:CLOSE #1:RETURN
11000 'WRITE DATA TO DISK
11010 OPEN "O",#1,"PAYROLL.FIL"
11020 PRINT #1,NE;"",";DATE$
11030 FOR I=1 TO NE
11040 PRINT #1,EN$(I);",",;NA$(I);",",;SS$(I);",",;FS$(I);",",;ND(I);",",;
11050 PRINT #1,PS$(I);",",;HR(I);",",;GP(I);",",;PP(I);",",;OD(I);",",;
11060 PRINT #1,YG(I);",",;YI(I);",",;YF(I);",",;YS(I);",",;YC(I);",",;YO(I)
11070 NEXT I:CLOSE #1:RETURN
12000 'CALCULATIONS
12010 IF PS$(I)="S" THEN 12050
12020 CLS:PRINT NA$(I):INPUT"No. Reg. Hours";NH
12030 INPUT"No. Overtime Hours";OV
12040 GP(I)=(HR(I)*NH)+(OV*(HR(I)*1.5)):GP(I)=INT(GP(I)*100+.5)/100
12050 Z1=GP(I)*PP(I):Z2=Z1-(1000*ND(I))
12060 IF FS$(I)="S" THEN GOSUB 18000
12070 IF FS$(I)="M" THEN GOSUB 19000
12080 FT=INT(FT*100+.5)/100
12090 FI=INT((GP(I)*.067)*100+.5)/100:CT=INT((GP(I)*.01)*100+.5)/100:OT=INT(((OD
(I)/100)*GP(I))*100+.5)/100

```



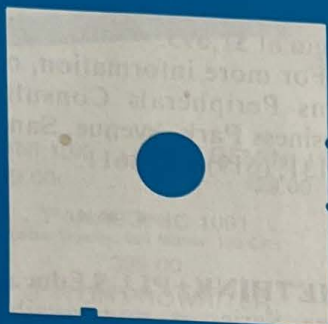
```

12100 IF FI+YF(I)>=2532.6 THEN FI=2532.6-YF(I)
12110 GOSUB 20000
12120 ST=(ST-(20*ND(I)))/PP(I)
12130 ST=INT(ST*100+.5)/100
12140 TD=FT+FI+ST+CT+OT
12150 TH=GP(I)-TD
12151 TGP=TGP+GP(I):TFT=TFT+FT:TFI=TFI+FI:TST=TST+ST:TCT=TCT+CT:TOT=TOT+OT
12160 LPRINT:LPRINT NA$(I);TAB(24);"EMP.#:";EN$(I);TAB(56);"SS#:";SS$(I)
12170 LPRINT:LPRINT"GROSS PAY      FED.TAX      FICA TAX      STATE TAX      CITY TA
X      OTHER"
12190 LPRINT USING"#####.##      #####.##      #####.##      #####.##      #####.##
#####.##";GP(I);FT;FI;ST;CT;OT
12210 LPRINT:LPRINT USING"NET PAY = #####.##";TH
12220 YG(I)=YG(I)+GP(I):YI(I)=YI(I)+FT:YF(I)=YF(I)+FI
12230 YS(I)=YS(I)+ST:YC(I)=YC(I)+CT:YO(I)=YO(I)+OT
12240 LPRINT TAB(33);"YEAR TO DATE"
12250 LPRINT"GROSS PAY      FED.TAX      FICA TAX      STATE TAX      CITY TAX
OTHER"
12260 LPRINT USING"#####.##      #####.##      #####.##      #####.##      #####.##
#####.##";YG(I);YI(I);YF(I);YS(I);YC(I);YO(I)
12270 LPRINT STRING$(80,95)
12280 RETURN
13000 'DISPLAY ROUTINE
13010 CLS:PRINT"1. EMPLOYEE #:";EN$(I)
13020 PRINT"2. NAME : ";NA$(I):PRINT"3. SOC. SEC. NO. : ";SS$(I)
13030 PRINT"4. FILING STATUS : ";FS$(I):PRINT"5. NO. DEP. : ";ND(I)
13040 PRINT"6. PAY STATUS : ";PS$(I):PRINT"7. HOURLY RATE : ";HR(I)
13050 PRINT"8. GROSS PAY : ";GP(I):PRINT"9. PAY PERIODS : ";PP(I)
13060 PRINT"10. OTHER (%): ";OD(I):PRINT"11. YTD GROSS : ";YG(I)
13070 PRINT"12. YTD FED. TAX : ";YI(I):PRINT"13. YTD FICA : ";YF(I)
13080 PRINT"14. YTD STATE : ";YS(I):PRINT"15. YTD CITY : ";YC(I)
13090 PRINT"16. YTD OTHER : ";YO(I)
13100 RETURN
18000 'FED TAX - SINGLE
18010 IF Z2<=1400 THEN FT=0:RETURN
18020 IF Z2>1400 AND Z2<=4100 THEN FT=(.12*(Z2-1400))/PP(I):RETURN
18030 IF Z2>4100 AND Z2<=9500 THEN FT=(.15*(Z2-4100)+324)/PP(I):RETURN
18040 IF Z2>9500 AND Z2<=14400 THEN FT=(.19*(Z2-9500)+1134)/PP(I):RETURN
18050 IF Z2>14400 AND Z2<=22000 THEN FT=(.25*(Z2-14400)+2065)/PP(I):RETURN
18060 IF Z2>22000 AND Z2<=27800 THEN FT=(.3*(Z2-22000)+3965)/PP(I):RETURN
18070 IF Z2>27800 AND Z2<=33100! THEN FT=(.34*(Z2-27800)+5705)/PP(I):RETURN
18080 IF Z2>33100! THEN FT=(.37*(Z2-33100!)+7507)/PP(I):RETURN
19000 'FED TAX - MARRIED
19010 IF Z2<=2400 THEN FT=0:RETURN
19020 IF Z2>2400 AND Z2<=9600 THEN FT=(.12*(Z2-2400))/PP(I):RETURN
19030 IF Z2>9600 AND Z2<=19180 THEN FT=(.17*(Z2-9600)+864)/PP(I):RETURN
19040 IF Z2>19180 AND Z2<=23600 THEN FT=(.22*(Z2-19180)+2492.6)/PP(I):RETURN
19050 IF Z2>23600 AND Z2<=28900 THEN FT=(.25*(Z2-23600)+3465)/PP(I):RETURN
19060 IF Z2>28900 AND Z2<=34200! THEN FT=(.28*(Z2-28900)+4790)/PP(I):RETURN
19070 IF Z2>34200! AND Z2<=44800! THEN FT=(.33*(Z2-34200!)+6274)/PP(I):RETURN
19080 IF Z2>44800! THEN FT=(.37*(Z2-44800!)+9772)/PP(I):RETURN
20000 'STATE TAX
20010 Z3=((GP(I)-FT)*PP(I))-650
20020 IF Z3<=3000 THEN ST=.02*Z3:RETURN
20030 IF Z3>3000 AND Z3<=4000 THEN ST=.03*(Z3-3000)+60:RETURN
20040 IF Z3>4000 AND Z3<=5000 THEN ST=.04*(Z3-4000)+90:RETURN
20050 IF Z3>5000 AND Z3<=8000 THEN ST=.05*(Z3-5000)+130:RETURN
20060 IF Z3>8000 THEN ST=.06*(Z3-8000)+280:RETURN

```



# SOFT TALK



The following products are currently available for the Sanyo 550 series computers and will be reviewed in a future issue of Soft Sector.

run on the Sanyo 550/555. The programs include utilities, educational games, and communications and business programs, and is currently selling for \$39, which includes a reduced rate on volumes two and three.

Also being offered is a BBS program written "exclusively" for the 550 series. Some of the features include online sign-on with password allocation, over 500 security levels, unlimited boards available for creation, online board creation by caller, multiple E-Mail capability and downloading of stored files. The BASIC source code is provided for modifications, the program can be compiled with *BASCOM*, and it is selling for \$150.

For more information, contact: Software Center Inc., 14 East Church St., Spring Valley, NY 10977; (914) 352-6801.

\* \* \*

**CP/M-80 ON THE 550 SERIES.** U.S. Digital has released a program that allows most programs written for the CP/M 2.2 operating system to run under MS-DOS. *CPeMulator-550* will run CP/M programs — after being transferred to an MS-DOS disk — by simply preceding the CP/M program name with the word "RUN." All disk and I/O operations are performed at system speed, while programs that perform large amounts of internal processing will run slower than they would on a standard CP/M system. *CPeMulator's* features include support of console BIOS calls and compatibility with programs that use BIOS calls, printer and serial communications port support, and 8080/8085 code compatibility.

*CPeMulator* is currently priced at \$99.95 and includes a manual with a user's guide and an overview of the CP/M operating system. For more information, contact Paul O'Brian, Vice President-Marketing/Sales, U.S. Digital Corporation, 5687 S.E. International Way, Portland, OR 97222; (503) 654-0668.

\* \* \*

**FIRST OF A SERIES.** The Software Center has just announced the first in a series of *Library* disks for the Sanyo 550 series of computers. Volume one in the series is a collection of more than 75 programs — some copyrighted and some from the public domain — which will all

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**FOR THE WRITER**, Digital Marketing is offering a group of programs to enhance the capabilities of *WordStar*. The programs are available individually or packaged together at a 45 percent savings.

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- 2) *Bibliography* (\$99). Books and articles relevant to your field are regularly added to a "library" file. Then, from inside a manuscript, type in a key name and *Bibliography* creates an alphabetized or numbered bibliography of the works cited.
- 3) *Grammatik* (\$75). A grammar and syntax analyst that detects common mistakes such as doubled words, inconsistent capitalization or incorrect punctuation. It points out common usage errors and displays the questionable words and phrases, and further profiles the manuscript by detailing word usage and average word and sentence length.
- 4) *The Random House Proofreader* (\$50). An automated spelling checker that allows the creation of specialized dictionaries and displays possible corrections if the user needs spelling assistance.
- 5) *Index* (\$99). A table of contents and index generator that takes the reference names from the manuscript and creates the index automatically, including "see" and "also see" references. After the preferred format for the table of contents is chosen, the program creates it and automatically arranges it by page number.

All of the programs are being sold together in the *Writer's Pack* for \$295. For more information, contact Digital Marketing, 2363 Boulevard Circle, Walnut Creek, CA 94595; 1-800-826-2222.

\*\*\*

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*CHKDSK* on one of the new hard disk drives being offered by Systems Peripherals Consultants. They are now delivering the Ultrastore disk drives in 70 megabyte and 140 megabyte formats, each featuring 30-millisecond access. The Ultrastore drives are priced at \$4,995 and \$6,795 respectively.

Other offerings in their line of hard disk drives range in size from 10 to 40 megabytes, including a 4.5 megabyte removable cartridge drive. Four models of the drives are internally installable in the Sanyo 550/555 and each includes an independent power supply and controller card that interfaces directly to the 62-pin expansion connector provided by Sanyo. Prices for these models begin at \$1,695.

For more information, contact Systems Peripherals Consultants, 9747 Business Park Avenue, San Diego, CA 92131; (619) 693-8611.

\*\*\*

**THE THINK+PLUS** Educational Software Series is now available in the Sanyo 550/555 format, according to Resource Software International, the producers of the products. The Think+Plus Series is composed of over 30 software packages — from Counting to Calculus — designed around the principle of Computer Aided Instruction.

Two recent additions to the series are *The Coach*, a college board score building program that provides test routines similar in format and content to college entrance exams, and chemistry software that ranges from elementary chemical vocabulary building through programs for the college and professional level.

All of the Think+Plus Educational Software packages retail for \$34.95 each. For a more comprehensive list of the offerings, contact Resource Software International, Inc., 330 New Brunswick Ave., Fords, NJ 08863; (201) 738-8500.

\*\*\*

**AN ASCII SCREEN DUMP** has been released for the Sanyo 550/555 running under MS-DOS 1.25. The *Pritchard Screen Dump Utility*, after being loaded, allows the user to dump the ASCII contents of the screen to the printer by pressing the CTRL and period keys, at any time, from within any program.

The *Pritchard Screen Dump Utility* is available for \$19.95, postage paid. To

*Continued on page 76*





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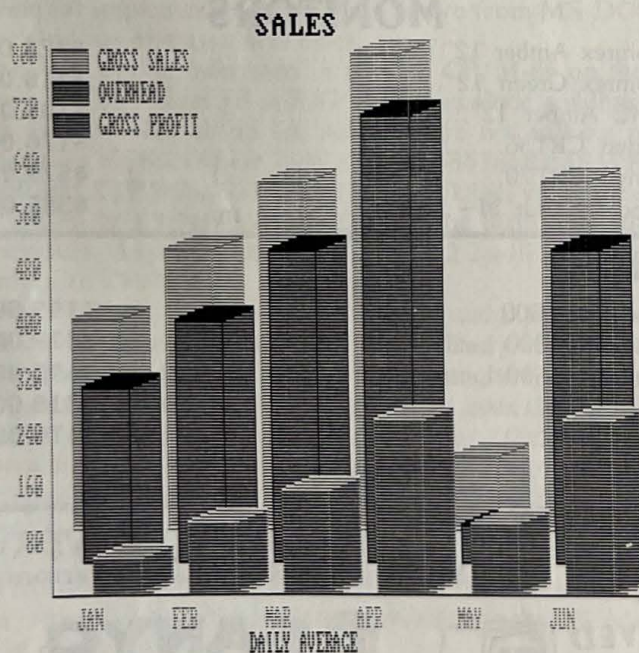
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# REVIEWS

## Software review

### *KSP Windows — Running CP/M-86 On The Sanyo 550/555*

*KSP Windows* will allow you to put CP/M-86, as configured for the IBM PC, on your Sanyo MBC-550 or 555. It is a BIOS (Basic Input Output System) for CP/M-86, plus a system for implementing it on your Sanyo from MS-DOS, plus windows and an alarm clock.

Anyone who is interested in putting CP/M-86 on their Sanyo will be interested in *KSP Windows* since it will provide an easy way to do so. And we are not talking big projects or big bucks here, either. CP/M-86 for the IBM PC is \$60 and *KSP Windows* is \$49 (both packages are needed). CP/M-86 is a rewrite of CP/M 2.2 for 8088 and 8086 processors. Anyone who knows CP/M 2.2 will be right at home with CP/M-86.

The CP/M BIOS must do all the terminal input, output, and the disk handling and input/output. Every key typed on the keyboard goes through the BIOS and every character written to or read from the floppy disks goes through the BIOS. The BIOS ties the operating system to the hardware. Normally it is invisible to the operator, since its job is to pass commands to the operating system, not to execute them directly. The operating system then uses the facilities of the BIOS to execute the commands. The BIOS can be extended so that new commands can be added to the operating system. Thus "window" and "alarm" are added to the CP/M-86 set of commands.

*KSP Windows* comes on an MS-DOS readable floppy disk with a 21-page manual which is designed to be an addition to the CP/M-86 manual. (CP/M-86 is not provided with *KSP Windows*.)

The manual is terse, to the point and technical, as befits the subject. The pages have holes punched and are ready to insert in the CP/M manual, although the pages are slightly

smaller than the pages in the CP/M-86 manual. The title page of the *KSP Windows* manual illustrates a screen with windows in use. It is the only graphics illustration in the manual.

The manual, or "Technical Description" as it is titled, has four chapters. Chapter 1 leads you through getting CP/M-86 installed and running. Chapter 2 explains clearly how to use windows and the alarm clock from the command line. There is a note on using other software and software in the public domain. (A configured *Modem7* is included with *KSP Windows*.) A number of utility programs that run under CP/M-86 are listed. These can be obtained with *KSP Windows* for an additional \$49.

Chapters 3 and 4 are in the nature of appendages that list the control codes and escape sequences for full utilization of windows and terminal attributes from your programs. This information gives you access to the added features of the *KSP Windows* BIOS.

The first time I installed the system I followed the directions and used drive A: to run the program *KSPBUILD*, which builds the system. When *KSPBUILD* signed on, it told me I could have used drive B:, but I could see no way to switch, so I let it go. A lot of disk swaps later, the CP/M system was built. I pushed the reset button and there was CP/M-86, courtesy of *KSP Windows*, on my Sanyo. Later, I redid this whole system building using drive B: as the default drive and ran *KSPBUILD* from there. It went quickly and smoothly.

The first version of *KSP Windows* had a bug in the BIOS that caused erratic behavior. I called Key Software Products and got Dan Lewis, the author of the program. He was aware of the problem and had an update ready to go. He would send it to me by mail. Also, he was including the utility package for me to see. When I had not received this in several days, I called again and he sent me another update via Federal Express. This arrived the next day. Dan Lewis was most helpful. He called me back the next day to make sure I got the update. When he called, the mailman had just left the first update, mailed several days ago, on my desk.

The update was installed with no trouble, and I made a double-sided disk to work with. The utilities were put on the same disk.

CP/M-86 is lean and mean like CP/M 2.2. When it signs on the Sanyo, it tries to run the *STARTUP.SUB* file which is not there. I put a dummy startup file there because any error messages make me nervous. *KSP Windows* is announced when the system first boots and then, except for the status line and the flashing block cursor, becomes invisible like a good BIOS should.

The BIOS seems to do its main job properly. Disks can be formatted, files can be copied and the keyboard and screen are attended to. The *KSP Windows* system is well-designed, in that creating a new operating system is made simple in spite of having to create it in the environment of a foreign, and probably hostile, operating system. If it offered nothing more than that and being a good BIOS, it would be worth the price, but there are windows, too. The CP/M "help" file has been edited to match *KSP Windows*' functions, so you can ask for "help window" and "help set alarm" and "help status line."

The basic idea behind windows is to be able to reserve parts of your screen for different displays. The reserved portion is a window into your display. The entire screen,



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when you first start, can be likened to a window that takes up the whole screen, hiding any other windows.

The notion of windows comes from thinking of your terminal as a window into the processes of the computer. The analogy is not really apt unless you have a real multitasking system that has a program or task that shows the status of all your processes.

If you do not have a multitasking system, you cannot see tasks working at the same time, but with software to divide the screen into independent regions and save the screen images in each, then you can utilize multiscreen images on a serial basis — first this task, then that task — and can refer back and forth or even keep the first task's output on the screen while doing the second task.

To implement this, two things are required: one, that the screen be divided into protected areas, and two, that memory of the content of each protected screen area be kept and redisplayed when that area is selected. When you call the protected areas windows, each window is a virtual terminal — so windows buy you more terminals without the hardware. The trade off is that each screen is either smaller or hidden behind another.

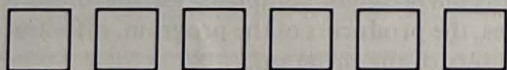
There are four windows in *KSP Windows*. The window you are in is marked in the status line at the bottom of the screen. You can go from one window to another by executing the command WINDOW X where X is the window you want to go to, or you can cycle through the windows by pressing CONTROL-BREAK. If there is a program running in a window, the number for that window is highlighted. The windows work as expected. You can let all four windows be full screen size and switch back and forth, or you can split the screen into regions and see them all, only smaller.

With *KSP Windows*, you can copy the contents of one window to another. The copy is as if you had typed that data in yourself, making this most useful for entering screen data to a word processing program or text editor.

The syntax for creating a window is flexible and simple enough. Window size is defined by "rowxcolumn." The 'x' is required. The location (upper left-hand corner) is "row, column." It would be easier on the operator if the 'x' and the ',' could be interchanged or at least made the same — small quibble.

Alarm Clock, the other added command, works just fine. Timekeeping with the *KSP Windows* BIOS is much better than that of MS-DOS.

As a BIOS for CP/M-86 and as a system for generating CP/M-86 on your Sanyo, I give this program high marks. It is a good system, whether you want to do windows or not. If you are developing CP/M-86 software, or just want to use CP/M-86 software, this system will work. Full but concise data is given for using everything in the system from your programs. You have full control of windows, the alarm clock, the terminal emulation, the RS-232 port, the character font table and the status line via software interrupts into *KSP Windows*.



#### Utilities For *KSP Windows*

The utility package for *KSP Windows* arrived too late to get into this review, but I will mention them. There is a

program that lets you redefine any key on the keyboard to be any string. Mine is not to question why you would want to do that.

There is also a program to create a simulated disk in memory — a RAM disk program. This I liked. It is simple to use, like all the KSP software, and genuinely useful. I created a 100K 'M' drive and put windows into it — window shuffling was fast.

There is a screen dump program that copies your screen bit by bit to the printer. It has to be set up for your printer and your printer must be able to do bit graphics. It is set up for the Epson printer as a default. I tried it on my Mannesman-Tally and it printed it almost right.

*Page* is a program to set up the *TYPE* command so that it stops when the screen is full. Not too useful and it sounds the "BELL" on the Sanyo, which is a no-no.

There is also a program that lets you create different fonts. Two sample fonts were included in my copy to show how it works.

The KSP Windows Utilities package is also \$49.

(Key Software Products, 440 Ninth Avenue, Menlo Park, CA 94025, 415-364-9847, \$49, CP/M-86 sold separately)

— Harold L. Reed



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*The Ultimate* is one of those multi-function programs so popular nowadays. Basically, it combines a word processor, spelling checker, database, E-COM mail and mail merge program. The package comes in a three-ring binder on two disks, and a cardboard keyboard overlay is provided to define the function keys.

Everything in this program depends on the word processor. The program has all the features you would expect to find in a good word processor, with the added ability to place "field markers" for "inserts" from your database files in the text. You may use it to write letters, papers and reports just like any of the popular word processors, but that is where the resemblance ends.

The *Spell* program is *The Ultimate's* spelling checker. The mini-dictionary, *SPELL.LST*, contains more than 12,000 words and there is a provision for adding your own. When you use the spelling checker on a document, it searches for matches. If you use a word that does not match a word in the mini-dictionary, the program creates a file containing that word. It continues adding words until the end of the file. At that time you can print the list and use the find and replace

# Canadians

Compusoft is the exclusive Canadian distributor for Michtron products, one of the largest suppliers of MBC 550 series software available. Compusoft offers a full line of business and professional programs to Canadians; ranging from Michtron's state of the art graphics package "Picasso" to a variety of programming aids such as BASIC and C compilers, assemblers and Disk Utility Packages. We also distribute Soft Sector magazine throughout Canada. Dealer enquiries are welcome, so call or write Compusoft today for further details.



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function of *Word*, the word processor, to correct your text. You may also merge the list of misspelled words on top of your text, use the find and replace function to correct the list, and therefore the text, and finally delete the list of words from the beginning of your text. Not the slickest way of doing things, but it works.

*The Ultimate* also serves as a database file manager. The word processor is used to create the format of your database, actually "placing" the fields where you want them on the word processor screen. Then, you use the underline character to set the field length. This file is saved with a *DEF* extension and acts as your "definition" file. You then enter one or more records which creates your database file with the extension of *DTA*. The definition files and database files may have up to 76 characters per line, 18 lines per record, and from two to 250 fields per record.

After you have entered your data, you may edit, sort, scan, delete, or add more records. The manual states that you can print your file, but they suggest using the *DOS TYPE* function — not very handy for mailing labels, etc. After searching the documentation, you will find (in the *Mail Merge* subsection) that you can create a formatted *Word* file which allows you to print your data in any form that you desire.

The *Mail Merge* program allows you to print reports, labels, forms, letters, etc., in any format that you wish. You also have the ability to sort the records and select records that meet a certain criteria. Another valuable function of the *Mail Merge* program is the ability to add new fields to your existing database files, in order to create a new file.

Once you have created a letter with the *Word* program and a mailing list with the *Word* and *Base* programs, you may either print out hard copies of the letters or use the *Z-Com* program to send your letters to the people you have selected via the E-COM electronic mail service of the Postal Service. Although some people believe that E-COM service is no longer available, it is. The Postal Service is in the process of trying to sell or lease the service to a private sector company, but it is still available for use, with no anticipated changes until at least March of next year. Full instructions for using the E-COM service are included in the documentation and I won't repeat them here.

There is an appendix to the documentation which shows examples of all the various file structures and sample format files, as well as a trouble-shooting section.

My major complaint is with the documentation. *The Ultimate* was created for the IBM PC and its clones. It has been converted to work on the Sanyo, but there are many places in the documentation that reference keys not found on the Sanyo keyboard, or keys and functions called something else. This aspect could drive a new Sanyo owner crazy trying to find keys like "PrtSc" that just don't exist. Another set of keys misdefined are the cursor control keys. Pay no attention to the keys they suggest and use the keys marked for the desired operation on the Sanyo and you will do fine.

Beyond this oversight, I found *The Ultimate* to be a very versatile and useful set of programs. For an all-in-one program, it is surprisingly complete. Furthermore, Computer Creations, the producers of the program, offer free technical help to users of the program.

(Computer Creations, 6861 Convoy Court #A, San Diego, CA 92111, 619-277-8822, \$149.50)

— John Ross



## Budding Earth Defenders Can Rejoice In *Demon Seed*

MichTron's adaptation of the arcade thriller, *Phoenix*, is most definitely a winner. Both graphically and mechanically, *Demon Seed* packs in all the elements that made this game an arcade smash.

The sky is black and in the distance you hear the screams of the coming onslaught. Suddenly they appear, unsightly alien demons attacking with incredible fierceness. You must defend yourself and your planet from these vicious bird-like creatures. Your ship is equipped with a laser cannon, a shield, and left/right horizontal movement.

The game consists of five basic waves, of which there are endless variations. In the first two waves, formations of multi-colored birds appear at the top of the screen. As each bird breaks formation, it dives, dropping eggs (bombs) on your ship. You must avoid the falling eggs and fend off the attackers with your weapons. To destroy a bird, you need only hit it once with a single laser bolt. At this point, the game sounds fairly simple, but when you have an entire squadron of birds constantly dropping deadly eggs, then the playing becomes a little tricky. Occasionally, the user will even encounter a kamikaze bird which will dive between the energy bolts and collide with the ship. In such cases, the shield can be of utmost importance. The best strategy during this portion of the game is to continually move back and forth while firing, using your shield as a last alternative (the

shield inhibits movement and can only be used for a limited time).

During waves three and four, the player is challenged with a new type of contest. From the top of the screen, descending in a vertical row, are seven monstrous eggs. As the eggs flitter from side to side on the screen, they slowly take shape and hatch into gigantic birds. With their enormous wings flapping and their loud screams spewing from the sound box, these creatures represent a threatening sight. The player must then avoid these egg-dropping, swooping creatures without being destroyed. When firing back, the player is in for an unpleasant surprise. You must hit the bird dead center in order to kill it. A hit on either wing only destroys the wing, which hardly seems to bother these vicious attackers. As in all other stages of this game, time is of supreme importance. Although no time limit exists, the longer the player takes to finish off his would-be destroyers, the more chances they have to finish him off. Because of the way the birds follow the ship, the best way to beat these stages is to remain stationary for as long as possible while continually firing on the demons.

It is in the fifth and last stage of this deadly sequence that the player must meet the enemy flagship and destroy it. To do this, the player has to fight his way through squadrons of demons, falling eggs, and an ever-descending flagship that threatens to crush him. This is most definitely the hardest of the stages to figure out and complete. It involves timing, strategy and persistence.

Besides the traditional five stages (contained in *Phoenix*), the authors have also added two special challenge stages that appear when a player has racked up enough points. Combining all of these waves, plus, as stated earlier, the many variations according to a player's level of expertise, *Demon Seed* is, to say the least, a very challenging and demanding game to experience.

Graphics and sound, although nothing like the arcade game, still represent quality and a great deal of workmanship on the part of the creators. The graphics are brightly colored, easy to see, and very descriptive of the theme. The sound makes the game come alive with zaps, screams, screeches, booms, and so many other exciting sounds. The presentation is slightly above the market standard.

All in all, *Demon Seed* is a fast-moving, space-styled game that is sure to please any arcade buff.

(MichTron, 576 S. Telegraph Rd., Pontiac, MI 48053, 313-334-5700, \$34.95)

— Bill Heitzeg

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## DB-FABS — Data Management Beyond The Bundle

Undecided about what to do with all the money you saved when you bought your Sanyo 550? Depending on where and when you purchased your Sanyo, you probably received the *WordStar*, *CalcStar* and *EasyWriter I* software that is packaged now with every Sanyo 550. If you opted for the Sanyo 555, or recently added a second drive, you probably also received the additional software, unless you specifically omitted this software bonus for even further savings.

These packages contain file management programs well suited to many applications. Each, in its own way, will interact with the word processor and spreadsheet programs previously mentioned.

By now many of you will have discovered that *PC-FILE*, of the User Supported Software concept, will also run on our 550/555. So with all this (free) packaged software, what else could you possibly ever need?

The answer to this question would most likely depend on why you purchased a Sanyo in the first place. If you are into writing your own programs that involve a good deal of data to be manipulated, you might consider a machine language interface to assist you with this task. In the past, all BASIC

interpreters have been limited in their file handling abilities. Sorting, re-indexing and altering existing files can become a nightmare — even for the most experienced programmers.

Priced at \$295, *DB-FABS* may be just the solution to your applications needs. Created, packaged and distributed by Computer Control Systems of Largo, Fla., *DB-FABS* includes a stand-alone module and a run-time module. The stand-alone module occupies approximately 110K of system RAM and the run-time, 96K. Minimal memory systems are generally not sufficient, so at least 192K is required for the stand-alone module and the run-time modules need 256K. Their documentation also states: "With limitations, you can get by with 160K drives for small applications. We recommend at least two 320K disk drives, and for large jobs, you should use a hard disk."

In the stand-alone mode, *DB-FABS* is a fully functional, command-oriented database. Written in 8088 assembler, it utilizes a "Fast Action B-Tree Structure" (hence the name *DB-FABS*).

This product provides the user with the ability to create files, assist in the management of records, create forms for the input and access of data, and generate reports listed out on the user's screen or printer. With high speed indexing and keyed access to records using a B-Tree structure and sort/select capabilities, *DB-FABS* provides many features rarely seen in even higher-priced programs.

The real strength of this product can be found in its run-time module. Once loaded and made resident, you can *CALL DB-FABS* directly from within your applications program. This method will provide you with 33 of the 46 stand-alone commands, 27 separate run-time commands, and access to records with the speed generally associated with machine language programs. However, here is the catch: *DB-FABS* documentation clearly states, "If you are using a language that has a machine language *CALL* statement with a parameter passing protocol which is different than the 'normal' Microsoft BASIC interpreter, the calling offset, *DBOFF*, will be different and, of course, that interface must be implemented. We will provide additional interfaces based upon market requirements. The *CALL* statements would also change."

Unfortunate as this may seem, Sanyo BASIC is not "normal"; better in many ways, but not one of Microsoft's children.

In addition to the disks containing the above modules, a demo disk is included which demonstrates the run-time mode. This demo, when run with Microsoft BASIC, highlights many of *DB-FABS*' better features. The instruction sheet included requests that you format a blank disk and place your system on it. Once formatted, you then *COPY* the files contained on the provided demo disk to this new demo disk. After all this has been done, you are instructed to add your *MSBASIC* (Microsoft's BASIC interpreter) to the demo diskette.

Herein lies the problem with using Sanyo BASIC. Aside from the many syntax errors generated by *REMark* statements directly following *GOSUBS* and the command structure of the initial *OPEN* statement required to provide the *DEF SEG*, the final obstacle remains the *CALL* statement previously addressed. With a little help from Sanyo's *BASIC Reference Manual*, I was able to correct the syntax problems and the *OPEN* statement error, but came up empty and baffled in my efforts to determine the new offset needed for

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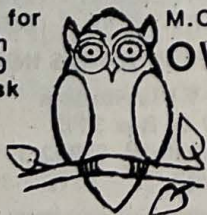
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the *CALL*. A call to Computer Control Systems' offices revealed that it wasn't a problem with Sanyo BASIC, but rather that they had not provided an entry point into their program and there appears to be no immediate solution.

I am sure that if enough interest and enthusiasm is generated by this new product, Computer Control Systems will be prompted to overcome this one area of incompatibility.

The inability to run this demo with Sanyo BASIC in no way detracts from the quality and overall ease of use found in the stand-alone mode. Nonetheless, any applications development requiring Sanyo BASIC and the run-time module will have to be shelved until this problem is corrected. If you already possess a Sanyo-compatible MSBASIC, you should have no problems with the demo. Both BASIC-86 and Compaq's BASICA will work with the demo without any further conversions.

In my conversation with one of their representatives, I inquired into the development of applications around their product and was told that, "Only an OEM license from them is needed for any application programs you write and want to market with their run-time module, and not the separate purchasing of a run-time module for each application sold." Unlike *DBASEII*, a product of Ashton-Tate, you are not required to purchase a separate run-time module, at a cost of \$100, for each application you sell.

Computer Control Systems also made me aware of a new version they are now marketing. I reviewed Version 1.10 and they have since released Version 1.11 and 1.11A. This new version adds several new commands to the run-time module and, most significantly, returns control back to our left and right cursor keys. I was told that if previous purchasers would contact them, they would be advised at that time how they may obtain an update.

The documentation provided is well-written and the two tutorials included provide adequate instruction as to the use of the stand-alone module and the run-time module. They also provide: a utility program for the configuring of different monitors (color or monochrome) and systems, a program to define sets of control character sequences for output to the printer, a program to redefine the function keys, and three DOS-level file conversion programs for converting data files written by other software systems to *DB-FABS* data files.

With all this going for *DB-FABS*, you are sure to hear more about this product in the near future. You should also expect to see new applications for the Sanyo 550 series with *DB-FABS*, and products like it, being used to improve and implement their data management facilities.

(Computer Control Systems, 298 21st Terrace S.E., Largo, FL 33541, 813-586-1886, \$295)

— G. L. Swearingen

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## Super Zap — Repairing Files Byte By Byte

*Super Zap* is a disk utility designed to aid the user in finding and correcting errors on a disk by "zapping" the desired changes straight to the disk. This program can read and write to either single- or double-sided disks and allows the user to display and edit any track and sector. The user can make the corrections in either Hex or ASCII formats. It has a help line and uses single keystroke commands, making the program both very quick and user-friendly. It is available from MichTron, Inc. for \$49.95.

The program is loaded under the title *SZAP* by the system DOS and the first screen that appears has a help line displayed along the bottom with the following commands: <PF1> SEC, <PF2> FILE, <PF3> LOG and <PF5> DOS. SEC is used to define the track and sector you want to view if you already know where the problem portion of the program is located. FILE is used to call up a file presently stored on the disk. LOG is used to change the disk drive where the problem file is stored. DOS will return you to the computer's DOS control.

After *Super Zap* has loaded, pressing PF3 will log you to the specified drive, A through D and then pressing PF2 will display a new help screen with the following written along the bottom: "Enter Filespec"... with <PF1> DIR written directly below the line. Pressing PF1 will list all of the files present on the logged drive horizontally across the top of the screen. *Super Zap* will read through every file, even though it is "protected." The filename must be entered exactly as it is displayed across the top of the screen by both title and extension, i.e., *TESTDOC.BAS*. Once you have specified the file you want to "zap," a new help screen is displayed with the following statement displayed along the bottom of the screen: Track & Sector To View [t,s]?. If you do not know where the problem is located in the program, pressing the ENTER key will display the first sector of the program by default.

The screen will then have the following appearance:

Addr.	Hex values	ASCII values
0000	4481 0041 5382 4201	D..AS.B.
0010	FF80 4153 43AC 53FF	...ASC.S.

In the upper right-hand corner of the screen will be the name of the current file being zapped and below that two lines which read "REL sec" and "EOF sec." The first line, REL sec, tells you where you are in the file and EOF sec lets you know the length of the file.

You now have a new help screen with the following commands written across the bottom: <PF1>MOD HEX, <PF2>MOD ASCII, <PF3>PTR, <CR>TO END, (+), (-), <UP>TRK, <DN>TRK. The '+' and '-' move you through the program a half sector at a time, either forward or backward and the <UP> and <DN> stand for PG UP, key '9' on the numeric keypad and PG DN, key '3' on the numeric keypad. These keys move you to the first or last sector of the file with one keystroke.

Should you require a copy of the screen so that you can work with a hard copy of the sector, pressing PF3 will dump the current screen to your printer.

Now that you have the sector displayed that you wish to work on, you can edit in either the Hex portion of the screen or the ASCII portion simply by pressing either the PF1 or PF2 key. If Hex is chosen, then a cursor appears under the first character of the Hex display and pressing a character on the keyboard will replace the Hex "word." For instance, suppose you wanted to change 3A90 to 3490. Each byte contains two characters and you will have to type in 34 in place of the 3A. The cursor will move automatically to the next byte (word). If the byte to be changed is in the center or near the end of the displayed sector information, then the cursor may be moved with the cursor control keys located on the numeric keypad to the right of the keyboard. All changed bytes, either Hex or ASCII, are displayed highlighted and nothing is changed until the ENTER key is depressed. After you have changed all the bytes and pressed the ENTER key, a prompt will appear at the bottom of the screen asking if you are sure you want the sector updated. Pressing the 'N' key leaves the disk sector as it was before the editing process began. Depressing the 'Y' key immediately updates the disk sector, the byte(s) are changed, the highlighting removed and the sector displayed with the new byte(s) displayed.

A short time ago I needed to convert some of my old *WordStar* files to ASCII and then further upload them into my current word processing program. As many of you may have discovered, not many word processors will accept a *WordStar* file as anything but garbage, if you can successfully get the file loaded.

To start the process, I have a program that will strip the special characters out of a *WordStar* file with the exception of carriage returns, spaces and indentation codes. This file is then converted to a true ASCII file and can be loaded and edited by any word processor capable of reading ASCII files.

After looking at a file from my word processor using *Super Zap*, I found that the first ten bytes of the file were coded 01. The *EDLIN* program is used to insert an extra line at the beginning of the file with approximately 10 to 15 periods in the line. Any character could be used, but a period is convenient and handy.

After the line of periods has been inserted, the *Super Zap* program is loaded and the first sector displayed. The Hex editor is called up and the periods replaced by code 01 for 10 bytes. *Voila!* A file that can be read and edited by my word processor without any difficulty.

I found *Super Zap* to be extremely user-friendly and in operation, faultless. The documentation is clearly written and takes you through the screens in a logical order with adequate explanation of what will occur on the screen and within the program at each step.

With a new system and little software developed for the system, this program has been invaluable when translating programs from other computers to run on the Sanyo. I recommend this one as a must for anyone that wants to get the most from their computer and isn't always satisfied with the program exactly as it comes from the distributor — a program that should be in everyone's files.

(MichTron, 576 S. Telegraph Rd., Pontiac, MI 48053, 313-334-5700, \$49.95)

— Fred Clabuesch



## Super Zap — Repairing Files Byte By Byte

*Super Zap* is a disk utility designed to aid the user in finding and correcting errors on a disk by "zapping" the desired changes straight to the disk. This program can read and write to either single- or double-sided disks and allows the user to display and edit any track and sector. The user can make the corrections in either Hex or ASCII formats. It has a help line and uses single keystroke commands, making the program both very quick and user-friendly. It is available from MichTron, Inc. for \$49.95

The program is loaded under the title *SZAP* by the system DOS and the first screen that appears has a help line displayed along the bottom with the following commands: <PF1> SEC, <PF2> FILE, <PF3> LOG and <PF5> DOS. SEC is used to define the track and sector you want to view if you already know where the problem portion of the program is located. FILE is used to call up a file presently stored on the disk. LOG is used to change the disk drive where the problem file is stored. DOS will return you to the computer's DOS control.

After *Super Zap* has loaded, pressing PF3 will log you to the specified drive, A through D and then pressing PF2 will display a new help screen with the following written along the bottom: "Enter Filespec"... with <PF1> DIR written directly below the line. Pressing PF1 will list all of the files present on the logged drive horizontally across the top of the screen. *Super Zap* will read through every file, even though it is "protected." The filename must be entered exactly as it is displayed across the top of the screen by both title and extension, i.e., *TESTDOC.BAS*. Once you have specified the file you want to "zap," a new help screen is displayed with the following statement displayed along the bottom of the screen: Track & Sector To View [t,s]?. If you do not know where the problem is located in the program, pressing the ENTER key will display the first sector of the program by default.

The screen will then have the following appearance:

Addr.	Hex values	ASCII values
0000	4481 0041 5382 4201	D..AS.B.
0010	FF80 4153 43AC 53FF	...ASC.S.

In the upper right-hand corner of the screen will be the name of the current file being zapped and below that two lines which read "REL sec" and "EOF sec." The first line, REL sec, tells you where you are in the file and EOF sec lets you know the length of the file.

You now have a new help screen with the following commands written across the bottom: <PF1>MOD HEX, <PF2>MOD ASCII, <PF3>PTR, <CR>TO END, (+), (-), <UP>TRK, <DN>TRK. The '+' and '-' move you through the program a half sector at a time, either forward or backward and the <UP> and <DN> stand for PG UP, key '9' on the numeric keypad and PG DN, key '3' on the numeric keypad. These keys move you to the first or last sector of the file with one keystroke.

Should you require a copy of the screen so that you can work with a hard copy of the sector, pressing PF3 will dump the current screen to your printer.

Now that you have the sector displayed that you wish to work on, you can edit in either the Hex portion of the screen or the ASCII portion simply by pressing either the PF1 or PF2 key. If Hex is chosen, then a cursor appears under the first character of the Hex display and pressing a character on the keyboard will replace the Hex "word." For instance, suppose you wanted to change 3A90 to 3490. Each byte contains two characters and you will have to type in 34 in place of the 3A. The cursor will move automatically to the next byte (word). If the byte to be changed is in the center or near the end of the displayed sector information, then the cursor may be moved with the cursor control keys located on the numeric keypad to the right of the keyboard. All changed bytes, either Hex or ASCII, are displayed highlighted and nothing is changed until the ENTER key is depressed. After you have changed all the bytes and pressed the ENTER key, a prompt will appear at the bottom of the screen asking if you are sure you want the sector updated. Pressing the 'N' key leaves the disk sector as it was before the editing process began. Depressing the 'Y' key immediately updates the disk sector, the byte(s) are changed, the highlighting removed and the sector displayed with the new byte(s) displayed.

A short time ago I needed to convert some of my old *WordStar* files to ASCII and then further upload them into my current word processing program. As many of you may have discovered, not many word processors will accept a *WordStar* file as anything but garbage, if you can successfully get the file loaded.

To start the process, I have a program that will strip the special characters out of a *WordStar* file with the exception of carriage returns, spaces and indentation codes. This file is then converted to a true ASCII file and can be loaded and edited by any word processor capable of reading ASCII files.

After looking at a file from my word processor using *Super Zap*, I found that the first ten bytes of the file were coded 01. The *EDLIN* program is used to insert an extra line at the beginning of the file with approximately 10 to 15 periods in the line. Any character could be used, but a period is convenient and handy.

After the line of periods has been inserted, the *Super Zap* program is loaded and the first sector displayed. The Hex editor is called up and the periods replaced by code 01 for 10 bytes. *Voila!* A file that can be read and edited by my word processor without any difficulty.

I found *Super Zap* to be extremely user-friendly and in operation, faultless. The documentation is clearly written and takes you through the screens in a logical order with adequate explanation of what will occur on the screen and within the program at each step.

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(MichTron, 576 S. Telegraph Rd., Pontiac, MI 48053, 313-334-5700, \$49.95)

— Fred Clabuesch



## Spooler — 'A Thing Of Beauty'

John Keats wrote, "a thing of beauty is a joy forever," and the same goes for a piece of software that does what it's supposed to do, does it without any fuss or bother, and does it on the first try.

Such is the case with the \$39.95 program, *Spooler*, by Tim Purves. Not everyone has a use for such a program, but I do.

As a professional writer, I spend most of my time writing. One thing I am not interested in is waiting for my Sanyo MBC-550 to gargle its way through a print routine to output a 3,000-word article. To me, time is money, and while it might be nice to take a break while a story is being printed, it also means that an idea, a phrase, a paragraph — all fairly fragile items — can evaporate while waiting for a printout to be completed. That's why, when the software arrived, I got things started right away.

The instructions aren't overwhelming and they don't have to be; just a single sheet with three commands. To quote from the introduction, spooling is "a technique of capturing data sent to a printer in a buffer, or RAM memory queue, which accumulates it and feeds it to the printer at the speed required by the printer. This buffering action allows the computer to proceed with other processing while the printer is being fed from the spooler."

The description is short and sweet, and so is the operation. After booting up in MS-DOS you simply invoke *SPOOL*. At that point you get a banner that says you have set aside 63K of buffer memory. An option is *SPOOL/XXX*, with the portion of the command after the slash indicating the number of kilobytes of memory you wish to set aside — anywhere from 1K to 63K. *Spooler* resets the buffer and erases its contents, but leaves it installed. To deactivate *Spooler* you have to re-boot.

One comforting note: If the data exceeds the buffer size, the program will command the computer to wait until space is available and no data is lost. Another comfort is the fact that the program occupies just 786 bytes, so it probably can find a home on even the most jam-packed system disk.

After firing up the spooler, I then invoked *EasyWriter*, found a 16K story, went through the *EasyWriter* print routine and watched the screen scroll the story. It moved about three times faster than it would have if the text was going to the printer instead of the buffer. At the end of the dump to the buffer, *EasyWriter* released itself from its print routine and I was free to start another story.


There is a caution; if you are using single sheets that require a paper change interrupt in the print routine, *Spooler* won't help. Obviously, once your text is in the buffer there is no further communication between it and the keyboard. That's the whole idea, but that idea kills the multiple-sheet option.

With that one exception, the program performed as advertised, the printer did its thing while the computer did its thing and Purves' single-line program moved microcomputers another step into the world of multitasking.

(Michigan Software, 43345 Grand River Avenue, Novi, MI 48050, 313-348-4477, and Level IV Products, Inc., 28194 Schoolcraft Road, Livonia, MI 48150, 313-525-6200, \$49.95 plus \$3 S/H)

— Morgan Ford  
and Gary Wormser

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## ProgramKey for WordStar — Putting Your Reference Manuals 'Up Against The Wall'

My friends sit on their appointed shelves, neatly arranged between boxes of diskettes and the phone book. They are lonely, dejected, and depressed. Their user once scanned them with great desire and anticipation, but the flame soon extinguished and they were banished to a solitary existence subject only to an occasional "quickie" reference. You know who they are — those silver vinyl volumes we are given as tools on our paths to word processing, database management, spreadsheeting and programming. They cannot stand alone as paragons of knowledge, so creative people around the world come up with ideas to help us through the hard times. First, there were reference guides. Just another buck for the silver vinyl manufacturers. Then came diskettes with tutorials — and more manuals. You could pay big money to go to class and hear it from an expert. Or, you could do what most of us did — trudge through the documentation alone.

One of the most interesting and helpful software aids lately is the template, a list of keywords and functions neatly printed on a plastic card that fits snugly around your keyboard. These templates vary in size and detail and often in completeness. Larry MacDonald of MacDonald Ventures in Mill Valley, Calif., has taken the template to the wall, literally. The *ProgramKey for WordStar* is a poster size (34 by 22 inches) summary of commands, menu options, and helpful hints into the idiosyncrasies of this famous program. From entering the program to system exit, this is a comprehensive reference guide to a not-so-easy-to-learn word processor.

Now, what does one do with it? First, I tried using it as a template. Not only did it cover my keyboard, but the Sanyo and monitor as well. Stupid idea. Next I followed logic and taped *ProgramKey* on the wall beside my desk, loaded *WordStar*, and began to type something meaningless to test my knowledge of the formatting functions. Stuck on some of the dot commands (headers, paper length, etc.), I was able to quickly find the answer on the chart. It sure beats using the manual. Similar searches for obscure operations proved rapidly rewarding. Designed about a year ago, MacDonald has put a good deal of thought into the layout and selection of explanations in this *ProgramKey*.

Also included at the bottom of the poster are *MailMerge* commands. Those of you who have tried this powerful but complex mailing list program will appreciate the help. Assistance for *SpellStar*, the MicroPro spelling checker for *WordStar*, is not included. This is an interesting omission, since more users will have occasion to check their spelling than to send out multiple letters. Larry admits he did not know about the software included with the Sanyo, but hopes that future *ProgramKeys* will cover more of the programs provided with the 550 series.

The user who does not have a convenient wall within two or three feet will have problems with *ProgramKey*. What

this poster gains in extent, it loses in immediacy if it cannot be seen without getting out of your chair. Given a multi-user situation (secretarial pool, etc.) where *ProgramKey* could be posted in a central area, this product would be excellent. Users would have a well-documented reference in a common place where help could be traded with immediate verification. The single user, however, should check out his wall situation before ordering. At \$9.95 retail, this *ProgramKey* may save you a sizable amount of flipping through our ol' buddies, the manuals.

(MacDonald Ventures, 415 Maple Street, Mill Valley, CA 94941, 415-388-9727, \$9.95)

— George M. Smart

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station by Bill Dunlevy. There are two font pointers in *Picasso* — one is used for printing menus and instructions, and the other is used for the ASCII and "Keyboard" options of the "Brush" command. One or both of these pointers can be easily changed to accommodate a custom font created and installed by the *Font* program. Here's how:

- 1) Create an *AUTOEXEC.BAT* file on your master system disk (the DOS disk you use to boot the system) with the command *FONT* included. This is *very important* to insure that your custom font is always loaded into the same place in memory. Once modified, *Picasso* will not print menus and/or brushes correctly unless a custom font is installed in the location specified.
- 2) Reboot the system, installing *FONT*.
- 3) Enter the *DEBUG* utility by typing

*DEBUG* at the *A>* prompt.

- 4) At the *DEBUG* prompt, type *D40:xxxx L2* where "xxxx" is the value used for the variable *DOSPTR* in *FONT.BAS*. This will display two bytes, indicating the segment of memory in which your font resides. Write down these two bytes as displayed, adding one to the second byte.
- 5) Insert the *Picasso* disk in drive A:, then type the following lines to load the program:

```
NPICASSO.COM
L
```

- 6) To check the font pointer for menus and instructions, type *D742C L2*. The bytes 00 and FF should be displayed. To change the pointer, type *E742C xx yy* where "xx" is the first byte you wrote down and "yy" is the second byte.
- 7) To check the font pointer for the "Brush" command, type *D79C7 L2*. The bytes 00 and FF should be displayed. To change the pointer, type *E79C7 xx yy* where "xx" is the first byte you wrote down and "yy" is the second byte.
- 8) When finished, type the following lines to write the modified program to the disk and exit *DEBUG*:

```
W (responds: Writing B4E0 bytes)
Q (returns to the DOS prompt)
```

You may reverse the patches at any time by using steps one through three and five through eight of the procedure above. Use the value 00 for the first patch byte and FF for the second.

J. Weaver Jr.  
Factory Programming  
Monroe, MI

## DOWN UNDER SANYO

Editor:

I have been fortunate to receive and study the first two issues of *SOFT SECTOR*, a rare privilege indeed, as we are quite accustomed to waiting three or four months for U.S. magazines in Australia.

I am convinced that *SOFT SECTOR* will provide Sanyo owners with a lively flow of information and give them a forum to exchange knowledge and ideas for many years to come. Keep up the good work.

Software Source has just been approached by Sanyo to be their exclusive distributor of software for Sanyo computers in this region. Any software company wishing to increase their marketing prospects should contact myself as soon as possible at (612) 389-6388.

Claude Almer  
Software Source Pty. Ltd.  
Bondi Junction, Australia

## A 'FAST' ONE

Editor:

I was given your first issue of *SOFT SECTOR* and found it was just what I need, since I am new to computers and recently acquired a Sanyo MBC-555 for my business and am still learning how to use it. I sent for a subscription immediately.

I was especially interested in the *FastLoan* article by Dr. Michael W. Ecker, since I just purchased a home and was looking for an amortization schedule program. However, I ran into a problem. The program does not have instructions for the printer. I need a hard copy and am not knowledgeable enough to figure out which *PRINT* commands should be *LPRINT* commands. Does the MBC-555 have a screen dump for BASIC or does the program have to be modified? How? I tried calling Sanyo's toll-free number for help, but found it was disconnected.

Jon Grossman  
Houston, TX

**Editor's Note:** Dr. Ecker responded to this problem in a Letter to the Editor on Page 25 of the October issue. If that doesn't fill your needs, there are several good screen dumps on the market that should.



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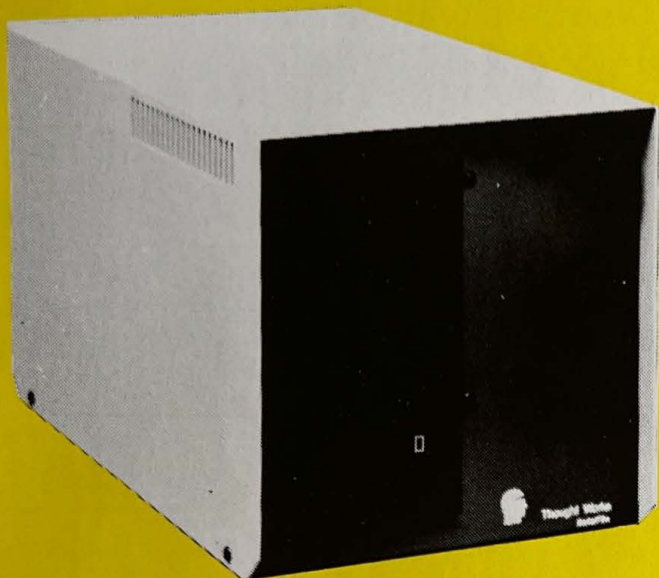
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# THE SOUNDING BOARD

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by Richard Kruse

*(Richard Kruse, an experienced electronics design engineer specializing in microprocessor applications, enjoys sharing his self-taught software skills in articles such as this one. He welcomes comments and criticism and prefers written correspondence, which should be addressed to 6221 Woodlow Drive, Wichita, KS 67220.)*

As one of the "old timers" in the personal computer field (my first CP/M system came on line in 1977), I've been watching with interest the market sweep being accomplished by the IBM PC and its work-alike cousins. Not wishing to be left behind altogether, I recently reached the decision to acquire an 8088/MS-DOS system of my own and started saving my nickels toward that end. I had already decided to go for a "clone," but even their prices were more than I wanted to spend, so I continued to watch and wait.

Thus, when the ads for the Sanyo MBC-550 series personal computers began to appear, I was immediately intrigued. Here was an apparently genuine 8088/MS-DOS computer, with some useful software thrown in, selling for a third of the going price. A little investigation revealed that the Sanyo machine was not truly IBM compatible, which bothered me not at all; I wanted to run software such as assemblers and compilers, which are usually available in "generic" MS-DOS form. The Sanyo could read (single-sided) IBM-type disks, which should ease the software-acquisition chore. Before I knew it, I was hooked.

Overall, my new two-drive Sanyo 550 has completely met my expectations. Yes, it's a little slow, the character video is a bit crowded, and there are some other compromises, but surprisingly few. Overall, the Sanyo is a very capable computer, able to take on serious work that the department store bargain brands can't touch.

One feature that's absent from the MBC-550, though, is one that I sorely missed: a "keyclick" audible or tactile keyboard response. I've discovered the computer keyclick to be one of those odd characteristics that folks either love or loathe; there's no middle ground. I'm in the former category, and the problem was compounded by the fact that I regularly use two other systems, both of which have keyboard beep systems. This is not to disparage the Sanyo keyboard; it's a comfortable one with a

light touch and keys that don't bind.

I was sufficiently distressed by the lack of a keyclick that I launched into an examination of the Sanyo's sound system. I'm happy to report that the keyclick proved easy to add: a neat software-only mod does the trick, and that's the main point of this article. Along the way, though, I learned some other potentially useful facts about the MBC-550 audio system, and I'll present those as well.

### The MBC-550 Sound System

The 550's speaker is driven, via a transistor buffer, from the otherwise unused TRANSMIT half of the keyboard input USART (Universal Synchronous/Asynchronous Receiver/Transmitter). This 8251-type device is set up (at boot time) to transfer 12-bit "words" at a 1,200 bit-per-second rate, thus each complete "word" is transferred in 0.01 second. The Sanyo's raucous "bell" tone, it turns out, is simply a sequence of ten "zero" words, transmitted sequentially to the speaker, resulting in a one-tenth-second burst of a 100-Hz tone. The actual process is to perform, in a loop, ten "OUT" instructions, with a data byte in the AL register of "00," to I/O Port 38 (Hex). (Refer to Figure 1.)

Part (a) of Figure 2 is a graphic representation of the wave form sent to the speaker during each 0.01-second "cycle," assuming an "00" value being transmitted (i.e., the standard bell tone). Parts (b) through (d) of Figure 2 depict some possible alternate values, which yield periodic wave forms having two, three and four pulses during each cycle; these generate alternate tones of 200 Hz, 300 Hz, and 400 Hz, respectively.

Unfortunately for would-be experimenters, the location of the bell subroutine within *IO.SYS* is subject to change with different versions. If you're using MS-DOS 1.25, and your *IO.SYS* is identified at sign-on time as "Version 1.00, 9-28-1983," then the tone-byte is located at 0040:08F6. Under MS-DOS



2.11, and the *IO.SYS* "Version 1.00, 2-13-1984," you'll find it at 0040:1246. (That's not a misprint . . . both are labeled Version 1.00 even though they're entirely different!) Yet other versions of *IO.SYS* are out there; their memory locations may or may not match these.

One fact immediately becomes apparent: as a tone generator, this system may be simple, but it's almost useless for any

With the help of the BASIC program presented here, you'll create a small machine language program, stored in a disk file called *CLICK.COM*. It's this program which constitutes the actual installation routine for the keyclick mod. Typing *CLICK* and hitting ENTER at the DOS prompt will insert and activate the patch, which will remain resident until the system is reset or powered down.

## *If you like a little response from your keyboard, try this modification just for 'clicks'*

kind of music generation. Only a relatively small number of harmonically-related tones can ever be produced, and most of those require reprogramming of the USART device. But you can't do *that* if the keyboard is to remain active, because it shares the same USART setup! This is definitely a "make do with what'cha got" situation. (Having said all of that, I have no doubt that some sharp programmer will get his Sanyo to play Bach. In this business, things that "can't be done" usually are.)

### The Keyclick

**B**ack now to the question of the keyclick. Refer again to Figure 2(a), which shows the wave form transmitted to the speaker when a "zero" byte is written to the USART. Notice that each .01-second cycle contains a single pulse; so it is that a single "zero" byte to the speaker will come out as a "pop." This should make an acceptable keyclick if we can get it to occur at the right time.

We'll accomplish this by adding a small fragment of code to click the speaker, and "stealing" the interrupt vector that points to the original keypress-interrupt handler. In other words, we'll insert a new vector, causing control to be transferred to our new code when a keypress is detected. After clicking the speaker, our code will transfer control back to the beginning of the original handler.

The *CLICK.COM* program, when it runs, actually installs a few bytes of code at offset 0100H in segment 0000 (0000:0100, in Intel terminology). It then takes the old four-byte keypress-handler vector from its known location (0000:03ECH) and plugs it into the new FAR JUMP instruction at the end of the patch. Finally, the installer plugs the four-byte starting location of the patch code (0000:0100H) into the handler-vector location (0000:03ECH). This achieves the desired goal. At each keypress, the patch code (which clicks the speaker) is executed first, then control is transferred to the original handler where the keycode is processed as usual.

Those familiar with 8088 system architecture will recognize that the address of our patch (0000:0100H) is actually within the 8088's interrupt-vector area. While this location is slightly "unsafe" (an application program just might install and use interrupt vectors 40H, 41H, and/or 42H), any interference with the patch under MS-DOS is extremely unlikely. The great advantage of such a location is that the patch is "fixed" within the memory map; there is never any need for relocation, even when changing from MS-DOS 1.25 to MS-DOS 2.11.

### The BASIC Program

**A**s already stated, the BASIC program listed here *does not* actually

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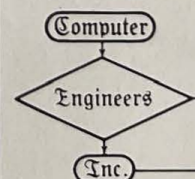
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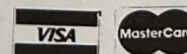
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install the keyclick patch. Rather, it creates a disk file named *CLICK.COM* which, when invoked from the MS-DOS command level, does the actual installation. Thus, once you've typed, double-checked, and saved the BASIC program, you need run it only once. After you've done so, use the *SYSTEM* command to return to MS-DOS. A directory check should now reveal the new *CLICK.COM* file. If not, return to BASIC and carefully recheck the BASIC program, especially the *DATA* statements, for entry errors. Then rerun the BASIC program.

If *CLICK.COM* appears in the directory listing, just type *CLICK* and ENTER. When the prompt reappears (it should take only a few seconds), the mod should be active. Again, if there's no click, or if the system "hangs," do a reset, return to BASIC and check the program for typos. The *CLICK.COM* file, once successfully created, can be transferred to other disks using the standard MS-DOS *COPY* command. You can also, if you wish, include it in an *AUTOEXEC.BAT* program so that

the keyclick mod will be installed automatically upon reset or power-up. (See your user's manual for more information on batch files.)

Caution: Neither the BASIC program nor the machine language installer is very smart. The BASIC program does not check the disk for an already existing *CLICK.COM* file; if one exists it will simply be overwritten. Similarly, the *CLICK.COM* program itself does not check to see whether or not the mod has already been installed in memory. If the patch is already in place, it will be "re-patched," and the code will end up "chasing its tail." The result? At the first keypress, the system will go into an endless loop, producing a continuous "bell" tone that only a full reset (or power-down) will stop!

### About The *DATA* Statements

Note that each of the *DATA* statements in the BASIC listing contains only one, two or three actual data bytes, in hexadecimal form. All remaining characters, from the colon to the end of

the line, are *REMARKs* and need not be typed during program entry. (Of course, they may be included exactly as shown if you so desire.) The *DATA* statements are broken down in this fashion so that the actual machine language instructions are clearly delineated for those interested in that aspect of the routines.

Attentive readers will also notice that the actual patch code, in Lines 590 to 630, is incomplete. Only the op-code portion (EAH) of the last instruction, a FAR JUMP, is included in the BASIC code. The remaining four bytes necessary for this instruction are "plugged in" by the installer after the patch code has been moved to segment 0000. Thus the installed patch occupies 10 bytes, not six as the *DATA* statements would indicate.

In conclusion, I'd have to say that the keyclick mod has significantly enhanced the value of my (already nice) Sanyo personal computer. I know that not all users will agree, but if you, too, are a keyclick advocate, take a few minutes and give it a try . . . you'll find it well worth the effort.

FIGURE 1: KEYBOARD/AUDIO I/O

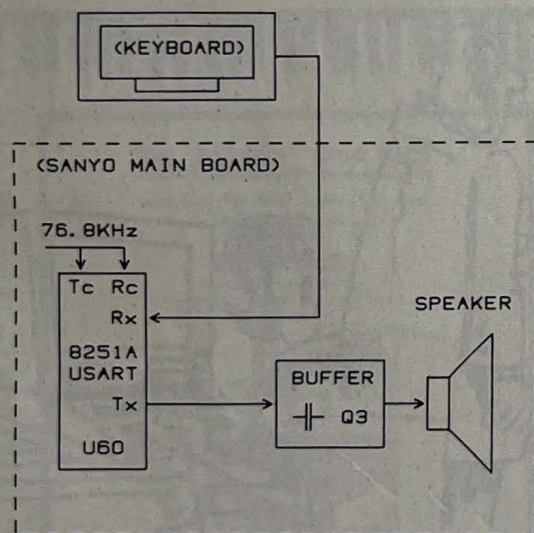
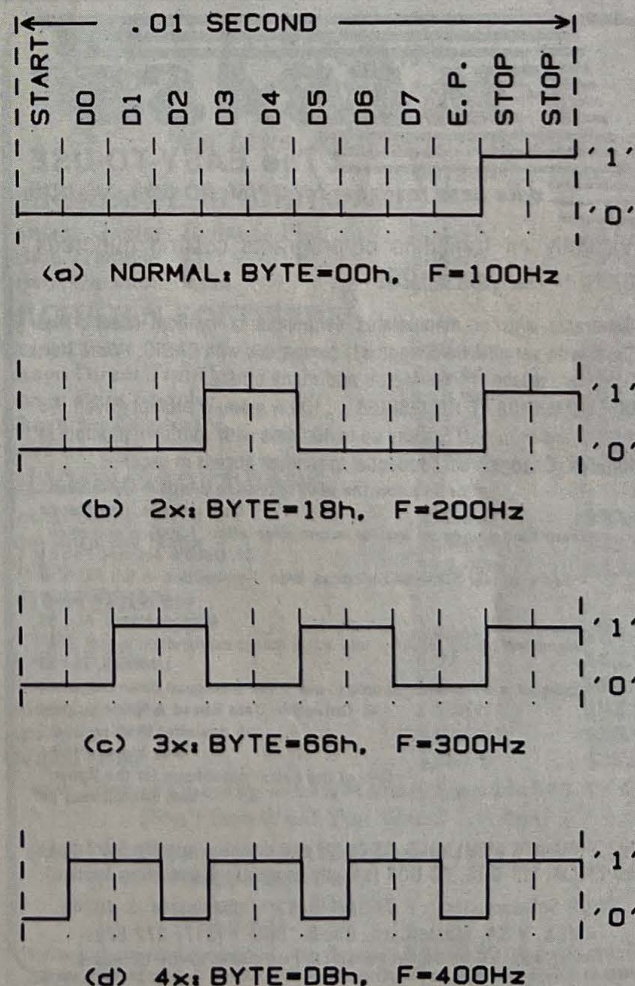


FIGURE 2: "BELL" TONE VARIATIONS



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# The listing:

```

100 'KEYCLICK-MOD GENERATOR for SANYO MBC-550 series
110 'By RICHARD M. KRUSE, August, 1984
120 '
130 PRINT
140 PRINT"Press <SPACE> to create CLICK.COM file on disk in drive A:";
150 KGO$=INKEY$:IF LEN(KGO$)<1 THEN 150
160 IF KGO$=" " THEN 180
170 PRINT:PRINT"Program stopped; no action taken.":END
180 PRINT:PRINT"Creating CLICK.COM file: Stand by... ";
190 COMFILE$="":FOR I%=0 TO 48
200 READ HEXBYTE$:COMFILE$=COMFILE$+CHR$(VAL("&H"+HEXBYTE$))
210 NEXT I%
220 OPEN "O",#1,"CLICK.COM":PRINT #1;COMFILE$;:CLOSE #1
230 PRINT"Task complete.":END
240 '
250 '***** MACHINE CODE AS HEXADECIMAL BYTES *****
260 'Comments FYI only... they need not be entered
270 '
280 'First, the installation code...
290 '
300 DATA 1E:'      PUSH DS      save for return to DOS
310 DATA FC:'      CLD          set move direction up
320 DATA 33,C0:'   XOR AX,AX    neat way to set AX=00
330 DATA 50:'      PUSH AX     save for later
340 DATA 8E,C0:'   MOV ES,AX    make E.SEG=00
350 DATA B9,0A,00:' MOV CX,000AH move 10 instruction bytes...

```

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DATA BANK IN THE SKY, — DUE TO A  
BROWNOUT.



```

360 DATA BE,2A,01:' MOV SI,012AH from code below...
370 DATA BF,00,01:' MOV DI,0100H to patch area
380 DATA 57:' PUSH DI
390 DATA F3,A4:' REPZ MOVSB
400 DATA 06:' PUSH ES
410 DATA 1F:' POP DS make D.SEG also=00
420 DATA B9,04,00:' MOV CX,0004 move four-byte address...
430 DATA BE,EC,03:' MOV SI,03ECH from current KEY.IN vector...
440 DATA BF,07,01:' MOV DI,0107H to FAR JMP at end of patch
450 DATA 56:' PUSH SI
460 DATA F3,A4:' REPZ MOVSB
470 DATA FA:' CLI disable interrupts temporarily
480 DATA 5F:' POP DI
490 DATA 58:' POP AX put new pointer to patch...
500 DATA AB:' STOSW into KEY.IN vector
510 DATA 58:' POP AX
520 DATA AB:' STOSW all four bytes new vector now...
530 DATA FB:' STI in place. re-enable interrupts
540 DATA 1F:' POP DS needed for return to DOS
550 DATA C3:' RET installation all done.
560 '
570 '...and now the actual patch code that clicks the speaker
580 '
590 DATA 50:' PUSH AX save value in AX register
600 DATA B0,00:' MOV AL,00 output a 00 byte...
610 DATA E6,38:' OUT 38H,AL to the speaker port
620 DATA 58:' POP AX restore AX and...
630 DATA EA:' JMP FAR X:X do original KEY.IN task

```



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# REDEFINE YOUR FUNCTION KEYS

*By Dan Webber*

**L**ook very closely — there's a \$10 bill hidden on this page! What? You don't see it? Well read on, because that's how much you can save by using this article and the original software supplied with your Sanyo 550/555 to permanently redefine the special function keys on your machine.

Insert the *IO.SYSTEM* disk that came with your Sanyo into the disk drive and look at the directory. The key to unlocking BASIC is a short command file named *DEBUG.COM*. *DEBUG* will take us into the very heart of the *BASIC.EXE* file, make our changes and then permanently store those changes into the original version. Since these types of changes are *permanent*, it is very important that all work be done on a backup copy of *BASIC*. *Do not use your only copy of BASIC.EXE to make these changes*. Take out a spare disk, copy onto it your command system, *DEBUG*, and *BASIC.EXE*. Now, place your original system disk in a drawer across the room where you can't possibly pick it up by mistake, get out your *Sanyo Operator's Guide* and let's get started!

The first thing we must do is rename *BASIC.EXE*. Call it *BASIC.ADD* or anything you like just as long as the *EXE* has been changed. *DEBUG* will let you change and alter to your heart's content, but if the file you're working in has an *EXE* or *HEX* extension, you won't be able to write your changes back into the original version. We rename the file by typing *RENAME BASIC.EXE BASIC.ADD* and pressing the ENTER key. Once the disk drive has stopped, type *DIR* and sure enough, there it is, *BASIC.ADD*. Now we call *DEBUG* into action and tell it to open *BASIC.ADD* by typing in *DEBUG BASIC.ADD* and pressing ENTER. Depending on your version of MS-DOS, 1.25 users will get the message "DEBUG-86 Version 1.08." and those using 2.11 will get no message at all. When the disk drive stops turning, the screen will scroll up one line and, in the case of MS-DOS 2.11, the cursor will be replaced with a dash (—). So what's the big deal, right? Well for all of you who have never had the opportunity to get beyond BASIC before, the fun is about to begin!

*(Dan Webber began his association with microcomputing in 1978 and is currently completing a degree in mechanical engineering at the University of Missouri in Rolla, Mo.)*



Type 'D' for "Display" and press ENTER. Whoee-e-e! Look at all those numbers! No telling what this is, but it must be *real* computing, right? What you're looking at is a display of memory locations, their contents and a "translated" version on the far right. Enter 'D' a few more times and notice how "blocks" of memory are displayed each time. Keep your eye on the translation on the far right because, if you didn't find yourself starting in the block that contains the words *CLS*, *AUTO* and *LIST*, you will see it very soon. As soon as this block appears on the display, get a pencil and write down the series of numbers that you see on the far left. Now, anytime you want to return to the beginning of your work area, all you have to do is type the letter 'D' followed immediately by those numbers. In my version of MS-DOS 2.11, the numbers are 1BC5:0300 as you can see in Figure 1. At this point you should have a similar display on your screen.

Open up your *Sanyo Operator's Guide* to the "Technical Reference" section, Pages 5-4 and 5-5. Along the outside of those tables are two columns of numbers, one for "Decimal Value" and another for "Hexadecimal Value." We will be using the hexadecimal only. Find the capital letter 'C' and travel up the vertical column until you reach the number in the hexadecimal value row. It's a four, right? Now look in the horizontal column of 'C' and you find a three. This tells us that the Hex representation of the capital letter 'C' is the hexadecimal number 43. I stress that this is a hexadecimal number and not the decimal value 43, since Hex numbers may also be comprised of six letters of the alphabet. Look at the hexadecimal number for the letter 'N.' It is in the vertical column four, but the horizontal column belongs to 'E,' so its Hex value is 4E. Don't get these confused with the decimal values as you type in your new function key values.

Now let's look on the screen at the line that contains the ".....CLS.." at the far right. Well, if the stuff on the right represents that line of numbers to the left of it, there must be the hexadecimal number for the letter 'C' in there somewhere. Yep, there it is in the fifth column from the end. What's that next to it, 4C? Look back in the table and—sure enough, it's the letter 'L.' See how easy this really is? The next one must be 'S,' right? And after that... 0D? What's this? Well, we have a very specific purpose for using *DEBUG* here and, as such, will concentrate on only the commands and information we need to accomplish our goal. Suffice it to say that the hexadecimal number 0D functions the same as if you had pressed the ENTER key. By placing 0D as a character in the command *CLS*, that command is immediately carried out when the function key is pressed without your having to enter it by pressing ENTER as you normally would.

You can assign up to eight characters for each key. They start in the position where the number 43 is found and there are enough free locations for 20 different keys. Where are the last 10 on the keyboard? Special function keys 11 through 20 are accessible by pressing the CTRL key plus the numbers 1, 2, 3, etc., on the top of your keyboard. Here is how the changes are made using *DEBUG*.

Type an 'E' for "Edit," but before you press ENTER, place immediately behind it the "line number" from the far left of the line that contains the word *CLS*. In this version of MS-DOS, I type *E1BC5:0360* and press ENTER. An "00.." is displayed and the cursor is waiting for input. *DEBUG* has now taken you to the first pair of numbers on that line and is waiting to see if you want to change them. Since we don't, simply press the space bar and *DEBUG* will jump over to the next group. Proceed like this until we have the 43 displayed. Whatever we place in the next eight position groups will be our PF1 key. A likely candidate for a quick, single keystroke entrant would be the command *PRINT*. Look up the corresponding hexadecimal numbers to spell this, including the quotation marks, and put them in the PF1 location. To do this type 50 and press the space bar to move to the next location. Type 52 (space), 49 (space), 4E (space), 54 (space), 22 (space). This takes up only six characters, so we must leave the next two empty (i.e., 00 00). Space over these two or, if there had been something there, replace the values with 00 00; until you are at the first position for the PF2 key, or space nine from where we started. From here on out it is exactly the same. Pressing the ENTER key will save the changes to memory but not yet affect the disk version. Just to check now, press ENTER and then display this same block using the 'D,' plus your line number, to see the changes made.

You should see *PRINT* displayed where before there was *CLS*; the quotation marks are at the beginning of the line immediately below. To get back in, type 'E' plus the line number and space over to where you want to make the changes. If you make a mistake press ENTER and then go back into that location. Once you have made all the changes you want or have filled up the 20 assignable keys, permanently save this version to the disk by pressing ENTER to leave the edit mode and then type 'W' for "Write."

Finally, type 'Q' for "Quit" and you'll find yourself back in DOS. Return *BASIC.ADD* to *BASIC.EXE* by using the *RENAME* command, load *BASIC*, type *KEY LIST*, and sit back and smile as your new PF keys are displayed on the screen. If you kept careful track of where each set of eight characters began and ended, you should have exactly what you expected on the screen. If not, go back in and correct your mistakes (you're experienced now, right?). Not only are you \$10 richer than you would have been otherwise, but you have also had a practical introduction to *DEBUG*.

I have to make one point. *DEBUG* has an incredible potential to wreak havoc if used incorrectly or carelessly. Anytime you experiment with altering any of your programs, only alter a backup copy and make sure that copy performs correctly before you use it to replace the original. That way, if anything goes wrong, you're still protected. Using *DEBUG* takes a little more effort than the other methods of changing the PF keys, but this way we've learned a little more about our Sanyo and what it takes to use it to its fullest capacity. Oh yeah, that \$10 hidden in this article—well, it's really right there in your own pocket where it belongs! Now don't spend it all in one place!



A>RENAME BASIC.EXE BASIC.ADD

A>DIR

Volume in drive A is DEBUG TEST  
Directory of A:\

```
COMMAND  COM      16117    9-17-83    1:25p
BASIC     ADD      46848    2-15-84    12:06a
DEBUG     COM      12146    9-05-83    12:40a
      3 File(s)      252928 bytes free
```

A>DEBUG BASIC.ADD

-D

1BC5:0100	4D 5A C0 00 5C 00 01 00-20 00 00 00 FF FF 8C 0A	MZ@.\... .....
1BC5:0110	00 0C 0A 76 00 00 00 00-1C 00 00 00 26 00 8C 0A	...v.....&...
1BC5:0120	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0130	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0140	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0150	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0160	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0170	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....

-D

1BC5:0180	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:01B0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:01C0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:01D0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:01E0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:01F0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....

-D

1BC5:0200	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0210	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0220	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0230	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0240	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0250	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0260	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0270	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....

-D

1BC5:0280	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0290	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02A0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02B0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02C0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02D0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02E0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:02F0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....

-D

1BC5:0300	E9 ED 02 37 00 50 12 02-00 00 00 B3 01 7E 01 8D	im.7.P.....3.~..
1BC5:0310	01 91 01 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0320	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0330	00 00 00 0C 00 00 00 00-00 00 00 1E 00 00 00 00	.....
1BC5:0340	00 00 00 1F 00 00 00 00-00 00 00 1C 00 00 00 00	.....
1BC5:0350	00 00 00 1D 00 00 00 00-00 00 00 12 00 00 00 00	.....
1BC5:0360	00 00 00 7F 00 00 00 00-00 00 00 43 4C 53 0D 00	.....CLS..
1BC5:0370	00 00 00 41 55 54 4F 20-00 00 00 4C 49 53 54 00	...AUTO ...LIST.

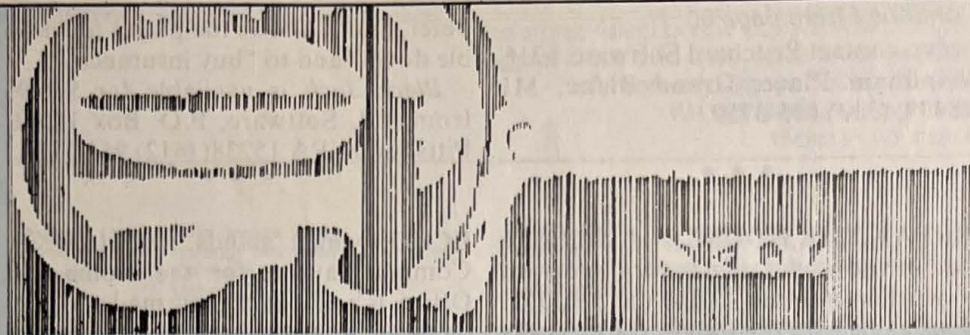
-D

1BC5:0380	00 00 00 52 55 4E 0D 00-00 00 00 46 49 4C 45 53	...RUN.....FILES
1BC5:0390	0D 00 00 4B 45 59 20 4C-49 53 54 53 41 56 45 20	...KEY LISTSAVE
1BC5:03A0	22 00 00 4C 4F 41 44 20-22 00 00 49 4E 50 55 54	"..LOAD "..INPUT
1BC5:03B0	20 00 00 50 52 49 4E 54-20 00 00 00 00 00 00 00	..PRINT .....
1BC5:03C0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:03D0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:03E0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:03F0	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....

Entering DEBUG

Standard function  
key values





-E1BC5:0360

1BC5:0360	00.	00.	00.	7F.	00.	00.	00.	00.
1BC5:0368	00.	00.	00.	43.50	4C.52	53.49	0D.4E	00.54
1BC5:0370	00.20	00.22	00.	41.47	55.4F	54.53	4F.55	20.42
1BC5:0378	00.20	00.	00.	4C.53	49.41	53.56	54.45	00.20
1BC5:0380	00.22	00.	00.	52.52	55.45	4E.54	0D.55	00.52
1BC5:0388	00.4E	00.	00.	46.52	49.55	4C.4E	45.0D	53.00
1BC5:0390	0D.00	00.	00.	4B.41	45.55	59.54	20.4F	4C.20
1BC5:0398	49.00	53.00	54.00	53.4C	41.49	56.53	45.54	20.0D
1BC5:03A0	22.00	00.	00.	4C.	4F.	41.	44.	20.
1BC5:03A8	22.	00.	00.	49.43	4E.4C	50.53	55.0D	54.00
1BC5:03B0	20.00	00.	00.	50.46	52.49	49.4C	4E.45	54.53
1BC5:03B8	20.0D	00.	00.	00.46	00.4F	00.52	00.20	00.4C
1BC5:03C0	00.3D	00.31	00.	00.4E	00.45	00.58	00.54	00.20
1BC5:03C8	00.4C	00.	00.	00.43	00.4F	00.4C	00.4F	00.52
1BC5:03D0	00.	00.	00.	00.4F	00.50	00.45	00.4E	00.20
1BC5:03D8	00.22	00.	00.	00.4C	00.50	00.52	00.49	00.4E
1BC5:03E0	00.54	00.20	00.22	00.49	00.4E	00.50	00.55	00.54
1BC5:03E8	00.20	00.22	00.	00.49	00.4E	00.4B	00.45	00.59
1BC5:03F0	00.24	00.	00.	00.52	00.45	00.4E	00.55	00.4D
1BC5:03F8	00.	00.	00.	00.53	00.59	00.4D	00.42	00.4F
1BC5:0400	00.4C	00.20	00.28	00.4C	00.4F	00.43	00.41	00.54
1BC5:0408	00.45							

Entering the  
values

-D1BC5:0300

1BC5:0300	E9 ED 02 37 00 50 12 02-00 00 00 B3 01 7E 01 8D	1m.7.P.....3.~..
1BC5:0310	01 91 01 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0320	00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00	.....
1BC5:0330	00 00 00 0C 00 00 00 00-00 00 00 1E 00 00 00 00	.....
1BC5:0340	00 00 00 1F 00 00 00 00-00 00 00 1C 00 00 00 00	.....
1BC5:0350	00 00 00 1D 00 00 00 00-00 00 00 12 00 00 00 00	.....
1BC5:0360	00 00 00 7F 00 00 00 00-00 00 00 50 52 49 4E 54	.....PRINT
1BC5:0370	20 22 00 47 4F 53 55 42-20 00 00 53 41 56 45 20	".GOSUB ..SAVE

1BC5:0380	22 00 00 52 45 54 55 52-4E 00 00 52 55 4E 0D 00	"..RETURN..RUN..
1BC5:0390	00 00 00 41 55 54 4F 20-00 00 00 4C 49 53 54 0D	...AUTO ...LIST.
1BC5:03A0	00 00 00 4C 4F 41 44 20-22 00 00 43 4C 53 0D 00	...LOAD "...CLS..
1BC5:03B0	00 00 00 46 49 4C 45 53-0D 00 00 46 4F 52 20 4C	...FILES...FOR L
1BC5:03C0	3D 31 00 4E 45 58 54 20-4C 00 00 43 4F 4C 4F 52	=1.NEXT L..COLOR
1BC5:03D0	00 00 00 4F 50 45 4E 20-22 00 00 4C 50 52 49 4E	...OPEN "...LPRIN
1BC5:03E0	54 20 22 49 4E 50 55 54-20 22 00 49 4E 4B 45 59	T "INPUT ".INKEY
1BC5:03F0	24 00 00 52 45 4E 55 4D-00 00 00 53 59 4D 42 4F	\$.RENUM...SYMB

Display and check.  
If errors, re-edit  
and correct

1BC5:0400	4C 20 28 4C 4F 43 41 54-45 00 00 41 55 54 4F 20	L (LOCATE..AUTO
1BC5:0410	00 00 00 42 45 45 50 20-00 00 00 43 4C 4F 53 45	...BEEP ...CLOSE
1BC5:0420	20 00 00 44 45 4C 45 54-45 20 00 20 45 4C 53 45	..DELETE . ELSE
1BC5:0430	20 00 00 46 4F 52 20 00-00 00 00 47 4F 54 4F 20	..FOR ...GOTO
1BC5:0440	00 00 00 48 45 58 24 28-00 00 00 49 46 20 00 00	...HEX\$(...IF ..
1BC5:0450	00 00 00 4B 49 4C 4C 20-22 00 00 4C 4F 41 44 20	...KILL "...LOAD
1BC5:0460	22 00 00 4D 45 52 47 45-20 00 00 4E 45 58 54 20	"..MERGE ..NEXT
1BC5:0470	00 00 00 4F 50 45 4E 20-22 00 00 50 52 49 4E 54	...OPEN "...PRINT

These values are  
assigned to the CTRL  
and letter keys

-W  
Writing B700 bytes

-Q

Write to disk  
and quit

A>RENAME BASIC.ADD BASIC.EXE



Continued from page 50

order, contact Pritchard Software, 6316 Windham Place, Grand Blanc, MI 48439; (313) 695-3759.

\* \* \*

**BREAK THE HOUSE.** A.J. Software has introduced a *Black Jack* program — written in BASIC — for the 550/555. This game uses the standard Las Vegas style of play with one deck and face down house cards, played by the com-

puter, and it allows the player to “double down” and to “buy insurance.”

*Black Jack* is available for \$16.95 from A.J. Software, P.O. Box 11581, Pittsburgh, PA 15238; (412) 963-1754.

\* \* \*

**ECHO**, which stands for Electronic Communications for the Home and Office, is a new electronic mail and conferencing service being offered by Budget Time-Share of Marina Del Rey, California. What makes this communica-

tions network different is their flat rate of \$10 per month with unlimited access.

Besides electronic mail, ECHO's services include interactive conversations (either one-to-one or in conference), automatic transcripts of conference calls, bulletin boards, databases and users' forums. In the future they expect to offer employment listings, classified advertising and electronic shopping.

For more information about ECHO and their services, contact them at 4739 Alla Road, Marina del Rey, CA 90291; or call Elliot Pressman at (213) 823-8415.

\* \* \*



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**TRIVIA TRIVIA** — As many of you know, trivia fans are the nicest people, and now your favorite computer can be magically transformed into the ultimate trivia game. This game comes with 1100 questions in five categories, and there are already four more question disks available with 1100 questions each. That's 5500 questions!! You can play **TRIVIA TRIVIA** by yourself or up to four can play against each other, and you have options to set the game length. Educators will want to note that a program is included to develop your own questions disks easily, and your students can play **TRIVIA TRIVIA** and learn their lessons as a happy side effect. If you like trivia, don't miss **TRIVIA TRIVIA**. The game with the question disk development program and 1100 questions in five categories is **\$34.95**. Additional question disks with 1100 questions each are available with questions on the BIBLE, ENTERTAINMENT, SPORTS, and questions for CHILDREN, and these are **\$19.95** each. If you order additional question disks at the same time as the game they are only **\$14.95** each.

**ASTROLOGY** — This program calculates natal horoscopes to an accuracy of about 1 minute of arc. It calculates all planet positions, moon, nodes, midheaven, ascendent, house cusps in five different house systems, all aspects, and harmonics. It does tropical or sidereal charts using the geocentric or heliocentric coordinate system. The five house systems available are Regiomontanus, Equal, Koch, Campanus, and Placidus. The orb for aspects can be specified within the range of 1 to 9 degrees, and even the minor aspects are computed. All you have to know is the time and place of birth. This program does hours of calculations in just five minutes, and is in use by many professional astrologers. **\$34.95**

**FANTASY GAMER'S BONANZA PACK** — This package of programs is for the fantasy or role-playing gamer. These are not games, but rather useful programs that help a game master generate characters, keep track of them, and aid in the conduct of the game. It includes 12 programs — all menu driven — and is easy to use. If you play fantasy games, this is what you have been waiting for. It does everything. It will even roll the dice for you! **\$34.95**

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**TAKING A BRIEF LOOK** at the consumer information services this month, subscribers to The Source may be interested to learn that Ross Jones, treasurer of The Reader's Digest Association, Inc., has been elected chairman of the board of Source Telecomputing Corp. STC, located in McLean, Va., has also announced two new services available for the 60,000 members of The Source Information Network: an Official Airline Guide and worldwide Accu-Weather forecasts. The Official Airline Guide allows members to search through a database of flight schedules and fares, comparing such things as aircraft type, meal service, number of stops and limitations. And with the Accu-Weather database, updated four times daily, members will be able to gather current weather conditions and three-day forecasts from around the world.

Along the phone line at CompuServe, the news is that they, also, have added two new databases. One, named Disclosure II, is an addition to their Executive Information Service. This service provides information on companies from the American, Over the Counter and New York Stock Exchanges covering company descriptions, financial information, income and balance sheet data, corporate officers' and directors' names and annual remuneration, subsidiary information, and the full text of management decisions. In conjunction, the Disclosure/Spectrum database lists detailed ownership information of more than 5,000 companies.

As an aside, some of you may be interested in CompuServe's database named "The World of Lotus," a new users' forum for subscribers using software developed by the Lotus Development Corp.

\* \* \*





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Contributions to **SOFT SECTOR** are welcome from everyone. We like to run a variety of programs which will be useful/helpful/fun for other Sanyo owners.

**FORMAT:** Unless the program accompanying your submission is less than 10 lines, we must have the program itself on disk. We will print out the listing to our specifications. We simply cannot take the time to key in (and debug our typing errors) material which is longer than that. Editorial copy can also be included on disk, using any of the word processors currently available for the Sanyo 550/555. However, please also include a double-spaced hard copy of your editorial material and hard copy of your program listing. Please do not send text in all capitals. Use upper- and lowercase. While it is a big help to us in typesetting for you to send your article saved on disk using the ASCII option, it is not mandatory. But we must have, at the very least, a double-spaced hard copy of the article.

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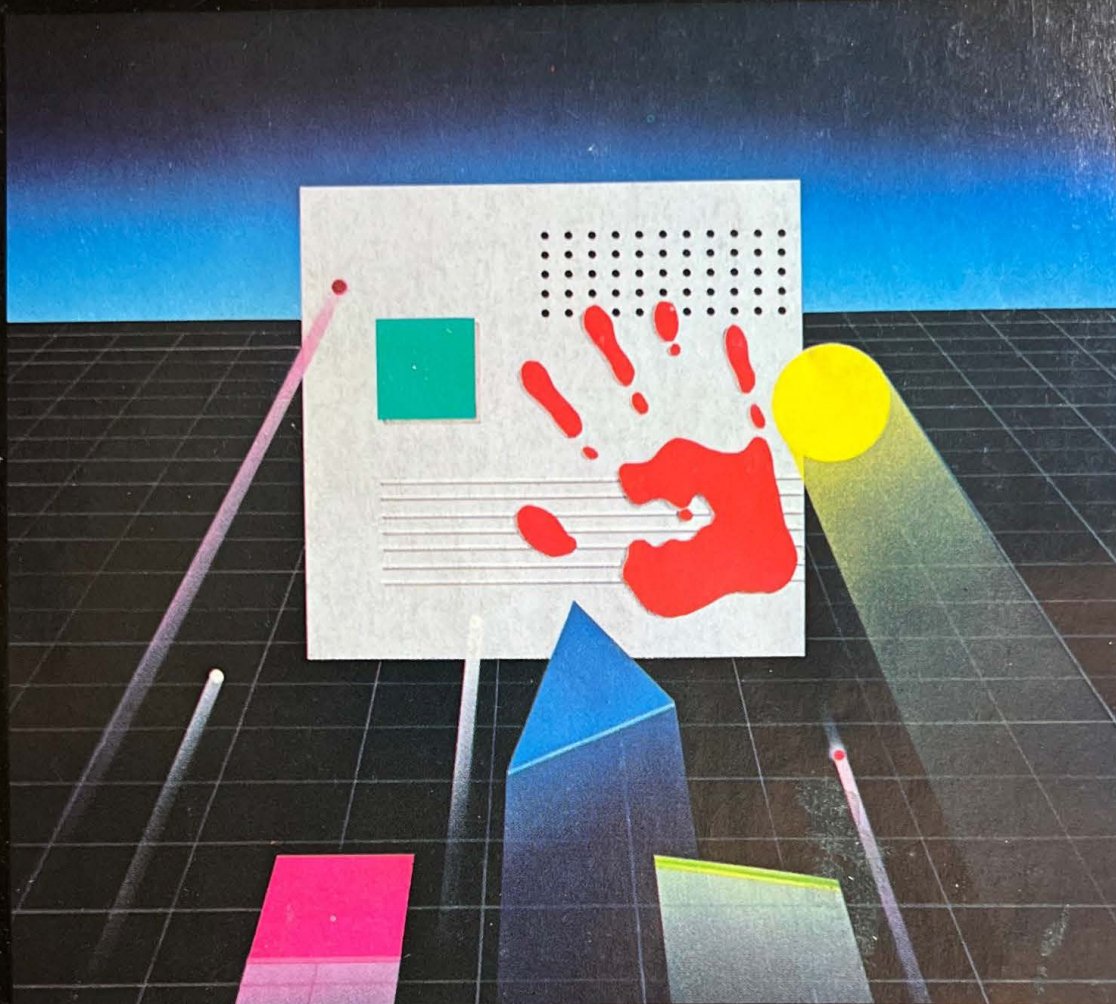
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